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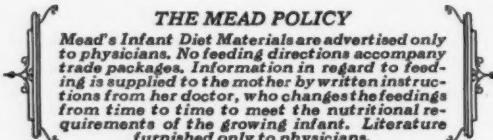
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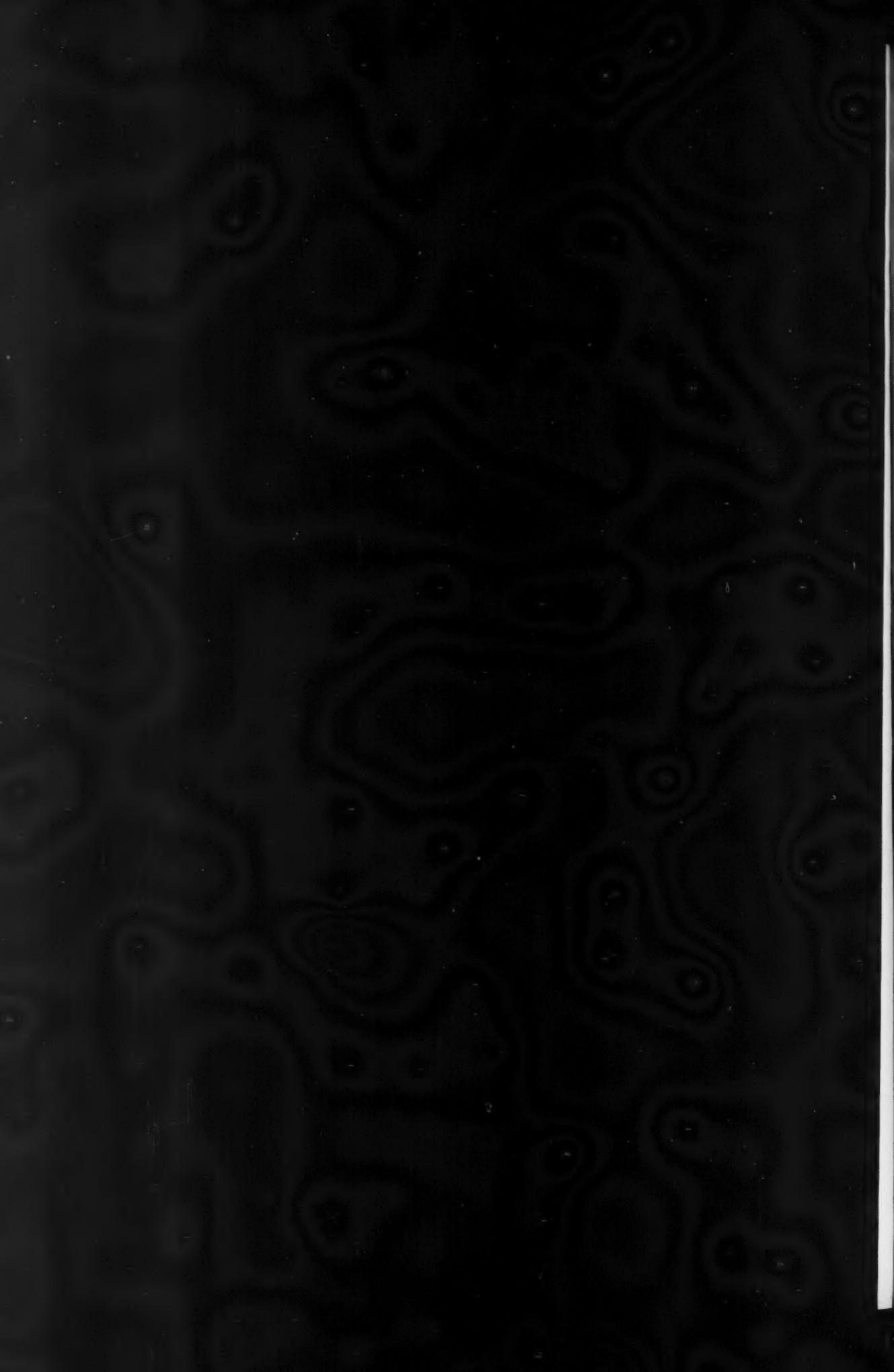


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CALIFORNIA AND WESTERN MEDICINE

VOLUME XXVIII

FEBRUARY, 1928

No. 2

SURGICAL ASPECTS OF CHEST INJURIES*

By CHARLES D. LOCKWOOD, M. D.
Pasadena

DISCUSSION by Emmet Rixford, M. D., San Francisco;
Charles H. Bulson, M. D., Napa; Clarence A. Johnson,
M. D., Los Angeles.

THE modern treatment of chest injuries is based largely upon experience attained in the World War. The lessons learned by this experience have not been as fully utilized in civil practice as they should have been. To be sure, the chest injuries of civil life are not so numerous nor so extensive as those of war and they differ greatly in character, but the anatomic and physiologic principles underlying all chest injuries are the same and regarding these much valuable data was accumulated during the war. As in other fields of chest surgery, the closest cooperation of the surgeon, the medical man and the roentgenologist is necessary in the successful treatment of chest injuries.

The subject of chest injuries may be divided into the following: (1) The injuries of the chest wall. (2) Injuries of the pleura. (3) Injuries of the lungs.

1. Simple fracture of the ribs where not more than two or three are injured is rarely serious. Simple strapping with adhesive is all that is necessary. Where many ribs are broken, however, there is grave danger of shock and of lung complications, particularly in older people. Hemo- and pneumothorax and massive collapse of one or more lobes of the lung may result without injury to the skin. These complications should be kept constantly in mind and carefully checked by frequent physical examination and x-ray pictures. (The essayist reported a case illustrating this danger.)

In multiple rib fractures the chest is best immobilized by a light plaster of Paris cast entirely encircling the chest and split down the center after the plaster has partially dried. The most serious injury to the chest wall is the "stove in" chest.

In this injury many ribs are fractured and fragments are driven into the pleura. This condition may be due to gun-shot wounds, to any flying missile, or to severe compression. Such injuries are usually fatal unless skillful surgery is resorted to. An attempt should be made to elevate sharp, jagged fragments which are liable to puncture the pleura or lung. Such fragments can often be held in place by anchoring them to adjacent sound ribs by heavy catgut or kangaroo tendon. Multiple rib fractures are sometimes associated with frac-

ture of the neck of the scapula and there will be marked deformity of the shoulder girdle. Such cases should be treated by heavy traction on the extended arm, as in the Bardenheuer treatment of fractures of the humerus. (The essayist reported a case illustrating this condition.)

2. The most distressing type of chest injury is the sucking wound, seldom seen in civil practice but very common in the recent war. Patients suffering from such injuries present a tragic sight; cyanotic, with marked dyspnea, blood and air being alternately sucked in and expelled by respiratory efforts, the lung collapsed, and the patient in profound shock. Startling improvement follows air-tight closure of such wounds either by skin suture or by plugging the wound with moist gauze. Injuries to the pleura are often associated with injuries to the chest wall or may result from penetration of a foreign body. The complicating pleural exudate is the most serious feature of such injuries. These exudates may be either serous, hemorrhagic, or purulent. Frequent aspirations guided by the physical signs and x-ray will usually restore the pleural cavity to a normal state. Purulent exudates will often require rib resection and free drainage. If the pleural cavity has been widely opened by the injury it should be cleansed and tightly sutured immediately. The complicating exudate can best be handled through some intact portion of the chest wall. Wounds of the diaphragm should be closed by intrathoracic suture.

3. Injuries to the lung: The most common injury to the lung encountered in civil practice is that due to gun-shot wounds. The ordinary steel-jacketed rifle bullet in its passage through the lung in most instances will cause little damage. Hemothorax often followed by empyema will result. If the bullet has penetrated the chest such a case should be treated expectantly. Frequent aspirations will often result in complete restitution. If pus forms, early rib resection and drainage are indicated. Soft-nosed bullets, those which have been deflected in their flight and fragments of shell entering the lung cause extensive laceration of the lungs and are often quickly fatal. Prompt and bold surgery will save many such cases. The chest should be widely opened by resection of the fourth rib from the midclavicular to the posterior axillary line. A Tuffier rib retractor or an ordinary Balfour abdominal retractor will give excellent exposure. The chest cavity should be cleansed of foreign bodies and clots and bleeding vessels ligated, and in case of extensive laceration of one or more lobes, lobectomy should be performed. Hemorrhage from the lung need not be feared; it can be controlled by mattress

* Read before the California Medical Association, Industrial Medicine and Surgery Section, at the Fifty-Sixth Annual Session, April 25-28, 1927.

sutures. In cases of severe lung injury with hemorrhage, active surgical treatment will save many lives; inaction will usually end in death. In young persons of good vitality, thoracotomy, free exposure of the bleeding lung and ligation should be practiced. Foreign bodies in the lung which are encapsulated and which are not giving rise to symptoms should not be disturbed.

An interesting complication of chest injuries is "massive collapse of the lungs." This phenomenon should be familiar to every surgeon dealing with chest injuries. It may result from an injury to the chest wall without penetration or it may be due to the entrance of a missile into the pleural cavity or lung. Massive collapse is a state of atelectasis in which a part or all of the lung is devoid of air. As the lung on the affected side collapses, the mediastinum and heart are drawn toward a position of marked obliquity and there is a compensatory emphysema of the opposite side. The absence of breath sounds on the affected side, the dullness on percussion and the dyspnea from which the patient suffers often lead to a diagnosis of hemothorax and needless attempts at aspiration are made. Moreover the emphysema and hyper-resonance of the opposite side may lead one to suspect pneumothorax and attempts to aspirate air will further complicate the condition. The collapse may occur on the side opposite to the injury and this still further complicates the diagnosis. The symptoms are characteristic and these coupled with the x-ray findings and physical examination should enable one familiar with the condition to make a diagnosis. The symptoms are intense dyspnea of sudden onset, cyanosis, rapid respiration and pulse, and an absence of fever. The physical examination reveals an absence of breath sounds, flatness of the affected lung, displacement of the heart to the affected side, and hyper-resonance of the contralateral lung. The x-ray shows the lung retracted, increased in density, the heart and mediastinum pulled toward the collapsed lung and there is a marked obliquity of the ribs on the affected side. The condition is rarely fatal and requires little treatment. Spontaneous adjustment takes place in twenty-four to forty-eight hours, with gradual re-expansion of the collapsed lung.

65 North Madison Avenue.

DISCUSSION

EMMET RIXFORD, M. D. (1795 California Street, San Francisco)—This paper might well be described as an example of "multum in parvo." For in a bare 1200 words Doctor Lockwood describes most of the traumatic lesions of the chest and epitomizes the essentials of proper treatment for each. However, there are some others, rare to be sure, but most interesting lesions which are evidently crowded out by the brevity. I refer particularly to concussion, contusion, and compression of the chest. Three similar but very definite clinical entities. In their etiology and symptomatology they are singularly like the corresponding lesions of the brain.

Concussion of the chest, most frequently found to have been delivered on the sternum. The symptoms are those of shock which may be rapidly fatal without anatomical lesion discoverable at autopsy. Lesser degrees of shock are rapidly recovered from.

Contusion of the chest results from a blow generally given of less velocity and most often found to have been received on the lateral walls of the chest.

The resulting lesion of the intrathoracic viscera depending on the elasticity of the chest wall which, by its yielding, permits the force of the blow to be transmitted to the underlying viscera.

Compression of the chest occurs as the result of traumatism at extremely low velocity producing a clinical picture, depending in character and intensity on the duration of the squeeze. In marked cases it results in cyanosis of the head and neck, edema, and multiple petechial hemorrhages from the eyes, nose, mouth, and skin.

Another lesion which occurs only in the young may be compared to what we have called the "bottom of the dishpan" fracture of the skull in infants, where the bone is sprung inward without fracture and which requires to be sprung out again by pressure from the inside or by traction by means of a hook introduced from without into the apex of the depressed skull plate or in the case of the chest into the sternum on the depressed group of ribs.

A word on simple fractures of the ribs. Doctor Lockwood says "Simple strapping with adhesive is all that is necessary." I would like to add that the pain is to be relieved only by putting the adhesive straps completely around the chest thereby immobilizing both sides.

*

CHARLES H. BULSON, M. D. (Migliavacca Building, Napa)—Like Doctor Rixford, I find few points in Doctor Lockwood's paper that have not been fully covered in a concise manner. The cases of chest injury that come under the surgeon's observation in civil practice are somewhat different in this respect; that the greater number of them are seen soon after the accident, while a vast majority of those received during the World War were not brought under treatment until many hours afterward, when serious complications had already taken place. The earlier chest injuries can be placed under competent surgical care the better chance the patient has for good recovery. While this is an axiom in all severe surgical injuries, it is especially important to injuries to the chest and abdomen, where shock is usually great and sepsis rapid in onset.

In closed or penetrating wounds of the chest, such as those received from a rifle bullet, shock is not so severe, as the injury to the lung is not so great; and the hemorrhage is slight, often giving rise to few symptoms. Exceptionally, however, where there is evidence of concealed hemorrhage, there will be manifested dyspnea, painful cough and increased pulse rate, thirst, impaired percussion over injured side; associated with profound shock. It is the wound associated with fractures of the ribs that produces the most alarming symptoms.

In open wounds of the chest, such as those produced by a spent or deflected bullet with low velocity, we find comminution of the ribs with laceration of the lung and pleura, and severe hemorrhage and shock. The hemorrhage is more apt to be due to the traumatism of the blood vessels of the parietal pleura than to the lung.

Doctor Lockwood has well outlined the treatment of these injuries. In those cases of concealed hemorrhage where paracentesis thoracis is indicated it is advisable to delay the operation for several days in order to prevent further hemorrhage. Some surgeons advise oxygen replacement to prevent sudden re-expansion of the lung. With ordinary paracentesis it is not advisable to withdraw all the fluid at one time, while with oxygen replacement large quantities may be withdrawn rendering it unnecessary to repeat the operation. Those having extensive experience with oxygen replacement claim no untoward results. Personally, I have not used this method.

I believe that the early treatment of shock cannot be overlooked, and have found that morphin not only relieves the pain but steadies the heart action. Another point that cannot be overlooked in treatment of chest injuries is sudden embarrassment of the circulatory system due to displacement of the heart and great vessels, a condition that requires constant sur-

veillance for impending signs of circulatory failure. In all gun-shot wounds tetanus antitoxin should be administered as soon as the patient's condition warrants.

*

CLARENCE A. JOHNSON, M. D. (523 West Sixth Street, Los Angeles)—Doctor Lockwood has given us a most excellent paper and I see little left for discussion. However, the third topic, the question of how best to treat the lung that has been injured by a missile from some firearm, I shall attempt to discuss. This is an injury which is more likely to be encountered in civil practice, and which was frequently seen by me during the World War, as my work was in the base hospital and not at the front.

Wounds which penetrate the chest and do not kill outright give phenomena associated with entry of air into the pleura and resultant collapse of the lung with loss of blood. I know of nothing more alarming to the surgeon than a patient with a collapsed lung and hemothorax. I believe that the best treatment is the free use of an opiate, as the patient as well as the doctor is alarmed, and anything which will slow circulation and retard respiration are the results most desired.

Foreign bodies in the lung which do not produce symptoms should be, as Doctor Lockwood stated, left alone. Occasionally we found a patient in the ward with a definite foreign body in the lung which had penetrated a large vessel and also a bronchus. Through obstruction of the air passage by hemorrhage, cyanosis resulted which necessitated the removal of this foreign body in order to save the soldier.

Operation on the lung for a foreign body should be through a resection of at least two, and possibly three ribs in the region where the foreign body has been located by x-ray. A good exposure of these cases is absolutely necessary in order to avoid traumatism of the surrounding lung with resulting hemorrhage.

THE ASCENDING COLON: NON-MALIGNANT ABNORMALITIES AND CONSTRICTING BANDS*

By FOSTER K. COLLINS, M. D.
Los Angeles

DISCUSSION by Andrew Stewart Lobingier, M. D., Los Angeles; Alanson Weeks, M. D., and G. D. Delprat, M. D., San Francisco; Edmund Butler, M. D., San Francisco.

THE ascending colon is that portion of the large intestine extending from the cecum to the liver.

The object of this paper is to attempt to show that these eight inches of intestinal tract are responsible for many of the symptoms for which other organs have been condemned.

Faulty positions and constrictions bring about pathology peculiarly reflected in other organs, while the ascending colon, the real offender, too often remains unsuspected.

Unrecognized, congenital or acquired, abnormalities in the ascending colon have frequently cast suspicion upon the operating ability of a surgeon, since the real causes of the symptoms, concerning which it was hoped the surgeon would find, were not removed.

More or less vague abdominal symptoms have been diagnosed as due to a diseased appendix or gall bladder, gastric ulcer, or other condition, and have caused operation for such. At operation, however, the organs in question may have been found more or less abnormal due to changes

* Read before the California Medical Association, Section on General Surgery at its Fifty-Sixth Annual Session, April 25-28, 1927.

secondary to the real pathology in the ascending colon.

It is the plea of this paper that in non-acute conditions involving the right abdomen, deformities about the ascending colon be understood and diagnosed, if possible, before operation. These should be sought for at operation with a confidence that symptoms in other organs, due to stasis, absorption, and irritation, will frequently clear up permanently with proper operative procedures. In our experience, the correction of such mechanical defects has given most satisfactory results.

DEFORMING BANDS

We are convinced that in many cases, through x-ray study, a fairly definite preoperative diagnosis can be made of size, abnormal positions, and deforming bands, causing what we are pleased to call "water trap" colon, similar to the "water trap" stomach described by Douglas.¹

It is this "water trap" type we wish to emphasize. In this type, bands from the ascending colon bind the transverse colon down toward the cecum, causing an acute angle at the hepatic flexure, and another in the transverse colon, where the band is attached. The resulting condition is mechanically identical to a water trap in the plumbing of any sink. As a result the ascending colon is more or less constantly distended with fluid, semisolids or gas. The symptoms are of a chronic or subacute nature. Frequently they are fairly distressing, but it is characteristic that with change of position the gut may empty and the symptoms quickly subside, only to regularly recur as the colon again distends. This distention, stasis, and absorption, lays the foundation for real pathology in the appendix; and by pressure on the ducts, the gall bladder, pancreas, or other organs, are involved. The drag of an overdistended ascending colon on the root of the superior mesenteric artery is a cause of duodenal distention and stasis.

Bands may cross the fundus of the gall bladder causing a pull upon that organ with each overdistention of the colon. Other firm short bands are not uncommon from the right abdominal wall to the ascending colon, causing pouching and constrictions, all with somewhat the same train of symptoms.

Duval² discusses deforming bands about the ascending colon and the results produced by their deforming influence, especially in forms of colitis.

We believe such pericolic Jackson membranes,³ and others which are frequently present, to be of more importance to diagnose and treat in so-called chronic appendicitis than the appendix itself. In this condition the patient is often of a neurasthenic type, is undernourished and usually constipated. There are more or less constant nagging pains in the right gastro-intestinal region, with frequent flatulence and tenderness in the right iliac fossa. There is seldom an acute attack. Surgery is indicated, since it is a mechanical trouble. The bands should not reform when cut, since the broad surface of the colon makes it possible to completely cover the raw surfaces.

Bands, congenital or acquired, are occasionally

found binding the colon to the anterior abdominal wall.

We will report a case where a congenital fibrous stalk attached at the umbilicus drew the midportion of the ascending colon toward the midabdomen at an acute angle.

DEFORMITIES CAUSED BY OTHER CONDITIONS THAN BANDS

Diverticuli occur as part of general diverticulosis of the colon. Pouches are also formed from overdistention. In several such cases of pouches we have turned these in by suturing and implication with satisfactory results.

Congenital dilatation—Hirschsprung's disease—is rarely present. In this condition the entire colon is many times larger than normal. This subject has been recently comprehensively covered by Hofmann and Ewell.⁴

An entire absence of the colon is also rare.

Deformities of the ascending colon are caused from compression by displaced organs such as displaced kidney, gall bladder, mesenteric cyst. The ascending colon is deformed as part of a generally contracted colon, in chronic spasm, with intermittent abdominal pain. This condition often is relieved by belladonna with hyoscyamus, and periods of rest in bed. There is always a tendency to relapse. Intussusception should be mentioned, but here the ascending colon acts simply as the host of an undesirable tenant.

ABNORMAL POSITIONS

The mesentery of the small intestine and the ascending and transverse colon may be attached only near the origin of the superior mesenteric artery, giving a condition known as "mesenterium commune," Piersol.⁵ There is then really an absence of the ascending colon; the small gut is therefore not crossed by the colon; there is no ligament of Trietz present to help locate the first portion of the jejunum. As in partial rotation, this condition should be borne in mind in performing gastro-enterostomy, Matthews.⁶

The ascending colon may be so long as to form folds, and its mesentery is known to have been twisted. It is also not infrequently found so detached as to form part of the contents of a femoral, inguinal or other external or internal hernia. The subject of ptosis of the right colon has been fully covered by Quain.⁷

A failure to rotate or descend normally is discussed in the comments on development.

The colon may be transposed and found in the left abdomen, in identical relation to left side organs as to the right, when in normal position. This may be a part of a total or partial transposition of the viscera. In true congenital transpositions the total is more common than a partial transposition, Arneill.⁸ According to Gant⁹ three hundred cases have been reported. We have seen and diagnosed three patients with complete transposition of the viscera, and have operated upon two; and also show with this paper the x-ray findings of complete transposition of all viscera of chest and abdomen in a patient who was recently operated for abscessed appendix.

Both rotation and migration may be aberrant

and result in malformations. The appendix, for instance, is often caught in the descent of the cecum and held up back of the ascending colon in a retroposition. Many bands and deformities, thought to be acquired, are due to developmental errors. Such malformations can be shown to run in families. A well-known law of heredity affirms that acquired malformations are never, but that congenital forms are inherited, Lynch.¹⁰ When congenital deformities, such as harelip, cleft palate, hernia, are found, it is well known that other defects are likely to be found, and this should be borne in mind in considering abdominal symptoms.

Before reviewing our cases we will mention the normal gross anatomy and relations of the ascending colon.

ANATOMY OF THE ASCENDING COLON

The ascending colon extends a distance of about eight inches from the cecum to the undersurface of the right lobe of the liver. It is covered laterally and anteriorly by the peritoneum. Posteriorly, areolar tissue, together with the peritoneum reflected from the lateral surfaces, bind the organ to the quadratus lumborum and psoas muscles and to a portion of the anterior surface of the right kidney. The ileum and anterior abdominal wall lie anterior to the organ. A slight constriction, even with the upper border of the ileum as it enters the cecum, marks the beginning of the cecum. The undersurface of the liver is decidedly notched where the hepatic flexure, the transverse colon, begins.

EMBRYOLOGY

In considering the normal position of the ascending colon we are compelled to consider also the development of the part, since it is impossible to understand certain positions, without a knowledge of the normal and more unusual processes of rotation and descent of this organ.

About the third week of embryonic life the intestinal tract begins to appear as an entity between the stomach and caudal end. Rapid changes take place and a U-shaped loop of intestine forms. The vitalline duct attaches itself to this loop and the umbilicus. This duct persists wholly or in part in 3 per cent of all children born, and is the origin of Meckel's diverticulum. Normally to the right of this attachment the cecum forms a pouching, the beginning of the formation of the large intestine. About the sixth or eighth week the large intestine consists only of a transverse and descending colon and rectum. About the third month the cecum rotates over the right kidney into the second, or canine position, and there is little further descent until after birth. With the later descent the ascending colon rotates to the right and attaches itself fairly close to the posterior abdominal wall with an obliteration of peritoneum posteriorly. Sometimes the obliteration of the peritoneal covering posteriorly does not take place and the ascending colon then is attached by a mesocolon of greater or less length, Piersol.¹¹

CASE REPORTS

CASE 1—Transposition of All Viscera—Mrs. O., age 70, mother of two normal children, was first seen November 17, 1926, with all the symptoms and signs of

an acute abscess in her left lower abdomen. The history indicated that over a period of three years short, severe, recurrent attacks of pain occurred in the same region. A physical examination indicated a transposition of the heart, stomach, and liver. An x-ray examination of the colon indicated the position of that organ transposed. On November 17, under local anesthesia, a left rectus incision was made and an appendiceal abscess was drained. The recovery from this condition was uneventful and a complete gastrointestinal study was obtained and the plates are now presented.

CASE 2—This case is reviewed to show the position of the cecum in some humans soon after birth. In a small percentage of cases this position persists, due to failure to descend and rotate.

A Japanese baby, age 2 months, was first seen with an acute abdomen of a few hours' duration, and the blood picture of an acute infection. The chest was clear and it was decided to operate for an acute appendix. A small right rectus incision was made. The cecum and ascending colon were not found in the right abdomen and were only located by gentle traction upon the omentum. This brought into view the transverse colon and the cecum from behind the stomach to the left of the midline of the body. The appendix was found to be acute and was easily removed.

CASE 3—Mary F., single, age 30, no previous operations, no serious illness, family history of no special interest. She presented herself stating she had been in generally good health, but had more or less constant dragging pains in her upper right abdomen, with frequent distension. This would pass and give relief, to recur constantly at longer or shorter intervals. There had been no jaundice or indication of deranged gall bladder function. A study of the case with x-ray findings led us to diagnose adhesions about the ascending colon. The operation, March 19, 1924, revealed a rather firm band attached to the ascending colon, crossing the fundus of the gall bladder and attached to the transverse colon in such a manner as to cause a pull upon the gall bladder with each distention of the colon. These bands were easily removed and raw surfaces covered. The appendix was normal but removed. Following an uneventful recovery, the patient has been free from all symptoms. This case is typical of four others in which operation showed practically the same findings.

CASE 4—Mrs. F., age 51, had never been operated. For a period of about two years her chief symptom was pain about the right costal margin. This would be relieved with the subsidence of flatulence. The pain never occurred at night and she slept well. She would be free from symptoms for weeks at a time and then again have pain every day for as long as two months at a time. She never vomited, was never jaundiced. The gaseous distention at times was extreme. The symptoms could be relieved by personal manipulation of the abdomen and change of position. The character of food ingested did not alter the symptoms. The bowels were regular and no mucus or blood was found in the stools. There had never been a distinct attack of appendicitis.

An x-ray study led to a diagnosis of a "water trap" condition of the ascending colon, the picture showing the characteristic position and the meal remaining abnormally long in the ascending colon.

At operation, May 24, 1926, it was found that a band from the ascending colon held the transverse colon down along the ascending colon for about five inches. The ascending colon was dilated and the acute angles described in this condition were present. The appendix was involved and was removed. The gall bladder was moderately thickened, contained calculi and was removed. We think the changes in these organs were influenced by the chronic stasis in the ascending colon. The subsequent relief and general well-being of this patient has been most satisfactory and has been the real incentive for the preparation of this paper.

CASE 5—Slides of x-ray in this case illustrate how an overdistended ascending colon, by its drag upon

the root of the superior mesenteric artery, causes an obstruction of the third portion of the duodenum causing its overdistension with stasis.

CASE 6—This case illustrates how bands produce a "water trap" condition in many of the patients where bands are found about the ascending colon. It also illustrates the results of neglect in these cases.

Mr. E., age 55, never seriously ill, gave a history of more or less distress in his right abdomen for twenty years; no acute attacks, no operations, but symptoms such as those described above in the consideration of bands. We saw him first in 1922 and, after a complete x-ray study, advised operation for adhesions about the ascending colon and gall bladder. He did not come for operation until August 3, 1926. During the four-year interval his symptoms grew worse and he lost forty pounds in weight. At intervals he showed moderate jaundice. At operation the findings revealed bands across the ascending colon to the transverse colon, holding that portion of the colon close down along the ascending colon in a typical "water trap" position. The gall bladder was covered by these bands; the cecum was cramped under the bands; the appendix was completely retrocecal with secondary changes. The gall bladder was filled with many small stones. We believe the changes in the gall bladder and appendix and the evidence of moderate myocarditis were largely the results of long stasis in the ascending colon. The general resistance was lowered and, while the surgical recovery progressed satisfactorily, the patient developed pneumonia and died on the eighth postoperative day.

CASE 7—Congenital Stalk—Dr. V., age 50, had never been operated. Right abdominal distress with train of symptoms previously described existing for many years. Was operated on October 6, 1926. A congenital stalk held the midportion of the ascending colon over in a kink toward the umbilicus. The appendix was removed and the pathologist's report stated: "Subacute mucosal appendicitis, lymphoid hyperplasia and moderate degree of infiltration."

CASE 8—Postoperative Bands—Mrs. P., age 35, operated ten years before for acute appendicitis and cystic right ovary. Since that time she had suffered with severe cramping in her right abdomen at frequent but irregular intervals. Distention of the abdomen and early vomiting ushered in these attacks. Relief was usually obtained from an active cathartic, or at times the gas would rumble through and there was instant relief. Her general health continued good. The x-ray study indicated adhesions about the ascending colon and she was operated November 2, 1926. Four distinct groups of bands were found:

1. The transverse colon was bound to the ascending colon in a "water trap" position;
2. Twelve inches of the terminal ileum were involved;
3. The sigmoid was bound to the fundus of the uterus in an acute kink; and
4. The gall bladder was normal, but held by a firm band to the second portion of the duodenum.

The patient has been entirely free from symptoms since her operation.

CASE 9—A Long Mesocolon—This case was typical of a series of cases we have had where amebic colitis had not yielded to treatment because of mechanical obstructions.

Mrs. F., age 42, never seriously ill. She had been treated for amebic colitis for many months; and the coccyx had recently been removed for pain in that region. Her abdominal symptoms were distressing, variable and indefinite. The chief symptom was a gurgling in the left pelvis. An x-ray study indicated a displaced ascending colon. There was an indefinite tenderness in the left pelvis, and a soft mass could be palpated. Was operated on October 22, 1926. The ascending colon was found attached by a mesocolon long enough to permit the cecum and appendix to be bound down to the rectum in the left pelvis. The appendix was removed, the pathologist's report stating: "Chronic appendicitis with lymphatic overgrowth." A

colopexy was performed on the ascending colon and the uterus held up by a Gilliam operation. The patient has done well, is practically free from her former symptoms, and the colitis is clearing up.

CONCLUSIONS

When operating in a non-acute abdomen a routine inspection of the ascending colon for abnormalities, faulty positions, and constricting bands, should be made.

These abnormalities lead to symptoms and changes in neighboring organs, obscuring the original and chief cause of the trouble.

Deforming conditions of the ascending colon, when left untreated, lead to unsatisfactory results and reflect upon the surgery performed.

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DISCUSSION

ANDREW STEWART LOBINGIER, M. D. (716 Merritt Building, Los Angeles)—In most of the acquired adhesions the primary focus of infection is the veriform appendix. Either through the lymph channels or the portal circulation bacteria lodge in the subserous reticular zone at the hepatic flexure, setting up a slow subacute inflammatory change. This is characterized by round cell infiltration and connective tissue proliferation, resulting in adhesions and deformity of the colon channel. These kinked and angled conditions are accentuated by omental adhesions which may extend to the border of the right lobe of the liver, to the gall bladder, or the duodenum. We may not only have interference with the colonic current and the discharge of bile, but obstruction at the pylorus, with mucous colitis and symptoms of pylorospasm.

We wrote on this subject fifteen years ago, reporting six cases of obstructive adhesions at the splenic flexure as well as a number at the hepatic flexure. These were among the first cases of *membrana peritonealis sinistra* which had been noted. For obvious reasons they are much less common than the adhesions at the hepatic flexure.

Doctor Collins very properly calls attention to the common oversight in not including a wider area of inspection when the appendix is operated on. In a large number of cases the appendix has been the original source of the resulting pathology, but its removal can only be an incident in correcting the symptom complex which arises from the distortion of the ascending and transverse colon. Moreover the internist should realize how fruitless it is to attempt to treat cases of mucous colitis or an inactive colon without first having these adhesions freed surgically.

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ALANSON WEEKS, M. D., AND G. D. DELPRAT, M. D. (384 Post Street, San Francisco)—Doctor Collins remarks on the fact that pathology in the form of constricting bands or adhesions about parts of the alimentary canal is frequently overlooked, and secondary pathological foci are attacked by the surgeon, while the primary condition is not recognized. There is only one answer: adequate and thorough explora-

tion. We have long advocated the long right rectus, or pararectus incision instead of a small incision, such as the McBurney. It is to be deplored that surgeons still pride themselves on "doing an appendectomy" through a one and one-half inch incision. Such small scars on the abdomen spell incomplete and inadequate exploration.

Of the symptoms caused by anomalous bands in the abdomen, whether of the upper abdomen or elsewhere, there can be no doubt. We have seen too many cases relieved by the section of such adhesions, and have this week presented a paper illustrating several types of such cases.

As Doctor Collins has stated, anomalous bands of the intestine cause stasis and putrefaction. When it is recalled, as Dr. B. W. Williams of London has shown, that the colon harbors anaerobic bacteria as part of the natural flora and that the growth of these organisms, with the liberation of their toxins, is particularly accelerated with obstructions of the bowel, whether partial or total, one can readily understand and interpret the misery of these patients.

The cooperation of a competent roentgenologist is of great value in preoperative diagnosis of these conditions. He must be trained, however, to look carefully for areas of constriction and deformities and interpret them correctly. Too frequently in the past has some such report as "some lack of mobility of the cecum" been accepted at its face value instead of stimulating inquiry into the cause of the restricted motion of that structure.

Especially should we remember that surgeons who were the most ardent supporters of Lane's removal of the large bowel have all gradually stopped the radical procedure because they have been reasonably well satisfied with the results they obtain by searching for and removing causes of poolings in this structure.

Do not expect too rapid results from the relief of bands. It may take some months before this type of chronic invalid arrives at the stage of complete recovery. Remember also that the chronically inflamed bowel with its abnormal bacteria should receive the proper attention of a medical man who will carefully watch and change the diets as required.

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EDMUND BUTLER, M. D. (490 Post Street, San Francisco)—Doctor Collins early in his paper made the statement: "The object of this paper is to attempt to show that the ascending colon is responsible for many of the symptoms for which other organs have been condemned."

It is my opinion that most of the symptoms producing adhesions and deformities of the colon are due to inflammatory processes in the gall bladder, liver, appendix, mesenteric lymph glands, or are congenital. If secondary to extrinsic inflammatory processes, then the primary exciting factors must be properly taken care of, as well as the releasing of adhesions. This fact is well emphasized by Doctor Collins' case reports, in most of which sufficient pathological findings were recorded to account for the symptoms without ascribing undue importance to the ascending colon.

The ascending colon should not be suspected until a careful check has been made upon the other structures that may cause right abdominal signs and symptoms.

The radiologic evidence of disturbed peristalsis of the ascending colon is difficult to elicit, for unless the interpretation is made by a thoroughly trained clinician who specializes in radiographic diagnosis the opinion is valueless.

Arthritis is undoubtedly influenced by abnormalities of the ascending colon, but these conditions do not improve following operation alone. A carefully planned dietetic and eliminative therapy extending over the remainder of the patient's life also must be carried out.

Doctor Collins is to be commended for so vividly arousing our interest in the large bowel, particularly

the ascending colon. No exploratory laparotomy should be completed without a careful search for abnormal conditions affecting this portion of the intestinal tract.

THE COMMONER TYPES OF GOITER— CLINICAL AND PATHOLOGICAL CLASSIFICATION*

WITH NOTES ON PREVENTION AND TREATMENT

By D. SCHUYLER PULFORD, M. D.
Woodland

INTRODUCTION

THE recognition of a goiter-bearing patient is not always easy, nor is the classification of that goiter always so simple. Clinicians and surgeons as a whole often fail to distinguish exophthalmic goiter from adenomatous goiter with hyperthyroidism (toxic adenoma) and the relationship of the adenomatous goiter with hyperthyroidism to the adenomatous goiter without hyperthyroidism is not sufficiently emphasized even today in the non-goitrous districts. The proper treatment of thyroid disease depends upon the recognition of the type of goiter in question. Failure to recognize that there are several kinds of goiter has resulted in much harm and an occasional unnecessary death.

While it should be emphasized that the recognition and classification of goiters must, in the last analysis, be from clinical signs and symptoms backed up by careful basal metabolic rate tests; nevertheless there is a definite gross and microscopic pathological picture which varies with the different types of thyroid disease. The different histopathologic picture may be the tissue explanation of the different chemistry of toxic adenoma and exophthalmic cases as shown by the different response to Lugol's solution.

The object of this paper is to call attention to a simple, workable, clinical classification of diseases of the thyroid gland correlating the pathology of the removed glands with the different clinical types insofar as that is possible, and to set down a few short notes on diagnosis, prevention, and treatment of the commoner types of goiter.

HISTORY

Mobius¹ in 1887 suggested that the clinical symptoms of Basedow's disease were due to an abnormally increased activity of the thyroid gland. Greenfield² in 1893 was the first to demonstrate this relationship by showing hypertrophy and hyperplasia in the thyroid gland of six typical cases of what is now called exophthalmic goiter. In 1910 Kocher³ practically differentiated true Graves' disease and adenomatous goiter with hyperthyroidism when he collected and described a large group of patients showing different reactions to iodin administration. He failed, however, to separate the groups clinically. It is interesting to note that Aschoff,⁴ independently of Kocher and Plummer, also made a distinction between these diseases from the pathologic study of

excised goiters. Since 1911 Plummer⁵ has repeatedly emphasized and maintained that there were two separate and distinct types of hyperthyroidism, each associated with a distinctive pathologic change in the thyroid gland. In 1913 Doctor Wilson⁶ reported that in exophthalmic goiter cases as described and diagnosed by Plummer, the thyroid always showed histologically parenchymatous hypertrophy and hyperplasia. Plummer's clinical observations were corroborated by Kendall's⁷ chemical studies on thyroxin. Dubois⁸ in 1916 published extensive observations on the basal metabolism rate in goiter patients, and Boothby⁹ showed the indirect gasometer method of calorimetry in estimating metabolism, a practical help in the diagnosis and treatment of thyroid diseases.

The two most important and recent advances in the handling of thyroid disease have been the use of iodin in the treatment of exophthalmic goiter, revived and rationalized by Plummer's convincing separation of exophthalmic goiter and toxic adenoma groups, and the use of x-ray in goiter treatment.

CLASSIFICATION (WITH SYNONYMS)

Goiters may be conveniently divided as follows (modified from Plummer):

1. Diffuse colloid goiter (simple-adolescent colloid hypertrophy).
2. Adenomatous goiter, without hyperthyroidism (non-toxic adenoma).
3. Adenomatous goiter, with hyperthyroidism (toxic adenoma).
4. Exophthalmic goiter (Graves' or Basedow's disease), (hypertrophic parenchymatous thyroid).
5. Mixed type of hyperthyroidism (a combination of toxic adenoma and exophthalmic goiter).
6. Myxedema.
7. Cretinism.
8. Thyroiditis.
9. Malignant disease.

By far the most common types encountered are the first five of these diseases. We shall confine our remarks to them. It should be emphasized at the onset that the most important point in the clinical classification of goiter revolves about Plummer's well-established differentiation between true exophthalmic goiter and the toxic adenomatous goiter.

DIAGNOSIS

Goiter diagnosis is one of the most, if not the most, difficult diagnostic problem which confronts the internist and surgeon today, especially in the non-goitrous districts. It is really only a very careful study of disease for years that enables one properly to diagnose and treat these cases. So it is that without that experience a properly controlled and operated basal metabolism rate station is the most valuable single factor in recognition and management of these diseases.

A. *Simple Colloid or Adolescent Goiter*—This type of goiter is most commonly seen in young people between the ages of 12 and 25. The thyroid enlargement is uniform, smooth thyroid-shaped and without palpable nodules. These goiters do not show signs of toxicity, the basal

* Read before the Annual Meeting of the Nevada State Medical Association, September 23, 1927.

metabolic rate being normal. They become bothersome from pressure, if large, and are in some cases quite disfiguring. They are considered physiologic in a way and tend to disappear spontaneously.

B. Adenomatous Goiter Without Hyperthyroidism (Non-toxic Adenoma)—In adenomatous goiters the thyroid presents an irregular, nodular enlargement. They are usually soft, though calcium deposit in a cystic adenoma may feel stony-hard like cancer, or an associated thyroiditis or hemorrhage may make the gland hard in consistency. The patients are usually 35 to 45 years of age, having had enlarged thyroids on the average for sixteen years before presenting themselves for treatment. The adenomata sometimes become very large with a tendency to interfere with respiration by pressure upon the recurrent laryngeal nerve and upon the trachea. They are sometimes substernal. Neither the vascular nor the nervous symptoms of hyperthyroidism is noted; the basal metabolic rate is normal. Their greatest danger is their tendency to become toxic, and if given iodin they will do so.

C. Adenomatous Goiter with Hyperthyroidism (Toxic Adenoma)—Toxic adenoma patients present themselves during middle life with a history of having had goiter for many years, but for the last few months an increasing weakness. The heart has become troublesome, the pulse rate rapid and perhaps irregular, and there may be shortness of breath on exertion and swelling of the feet. There is considerable nervousness and tremor, though these symptoms are more prominent as a rule in the exophthalmic type of goiter. It is most important to recognize that there has been a slow, steady development of these symptoms without remission. The basal metabolic rate is high, though not as a rule as high as in a "well-trained exophthalmic goiter case." The gland feels hard, but thyroiditis and carci-

noma are likewise hard. The blood pressure varies from 160 to 180 systolic and from 80 to 90 diastolic with a pulse rate at rest of about 90 to 110. In the cases with cardiac compensation, however, the rate may be very rapid and irregular from auricular fibrillation. We have a pulse pressure greatly increased, while in essential hypertension the diastolic blood pressure is elevated also, say with a reading of 180/110. There is a tendency to hypertension not seen in exophthalmic goiter (Plummer¹⁰). There is loss of weight although the patient has a good appetite. A "neuro" has a poor appetite, capricious, and does not lose weight. Excessive normal thyroxin output increases the basal metabolic rate. These toxic adenomata are nodular and, although hard, not so vascular as the exophthalmic goiter and, therefore, less often do we hear a bruit. Exophthalmos is never present in a purely adenomatous type of thyroid. Auricular fibrillation, dyspnea, and edema, may be present. About one in four cases usually shows auricular fibrillation, which disappears in most cases about two to three weeks after the operation. Some of these toxic adenomata produce serious vital organ degeneration without showing nervous symptoms. Colloid or non-toxic adenomata in neurasthenic people are often mistaken for hyperfunctioning goiters.

D. Exophthalmic Goiter (Graves' or Basedow's Disease, Hypertrophic Parenchymatous Thyroid, Exophthalmic Goiter of Plummer)—In exophthalmic goiter there is a sudden onset with a fluctuating course. The patient may be any age, but usually between 20 and 40. The disease runs in families and these patients are often optimistic, like tuberculosis subjects. There is a history of recent enlargement of the neck and a train of characteristic nervous symptoms, the latter often making their appearance before the former. The goiter is thyroid shaped, symmetrically enlarged, vascular, and smooth, unless adeno-

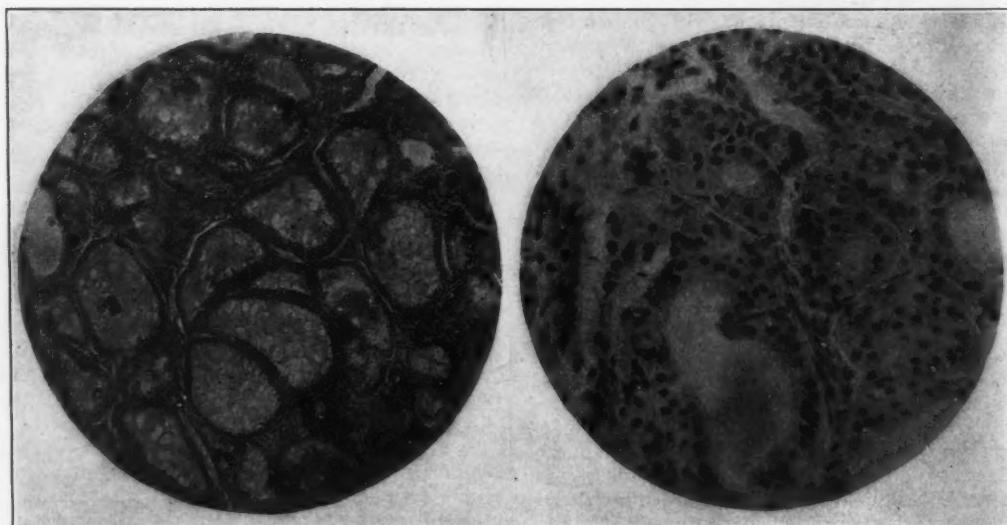


Fig. 1—Simple colloid goiter.

Fig. 2—Parenchymatous hypertrophy. Solid area with columnar cells.

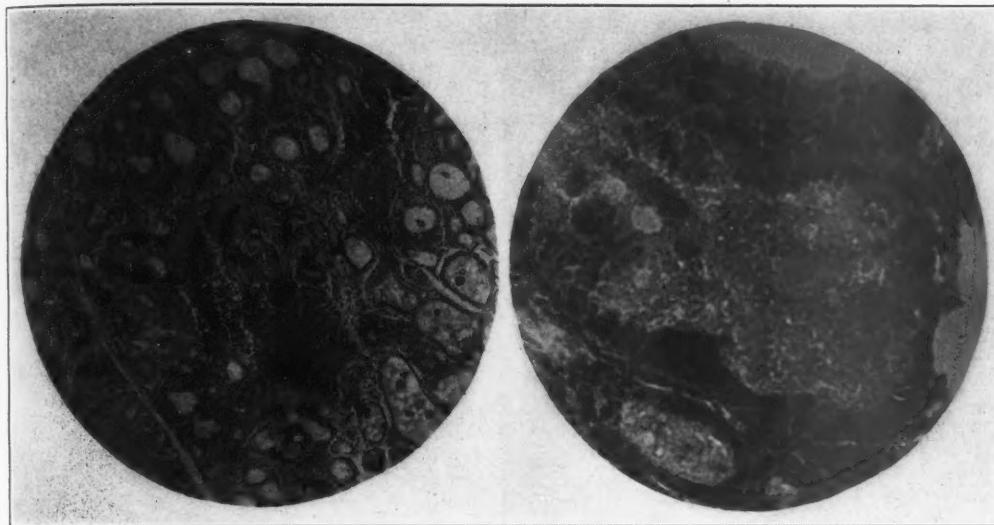


Fig. 3—Associated thyroiditis.

Fig. 4—Epithelia; cells desquamated into acini and colloid replacement in a hyperplastic area. Advanced stage of desquamation of cells and colloid replacement.

mata are present. The gland feels quite hard in the toxic cases. A bruit is often present; in 90 per cent of three-year cases and 80 per cent of three-month cases.¹¹

The patient presents marked symptoms of nervousness and heat intolerance; less bed clothes are needed and also a lower room temperature. Tremor, tachycardia, perspiration, and muscle weakness are present. Exophthalmos is noted in the vast majority of cases, though true exophthalmic goiters can be present with a negligible degree of protrusion of the eyeballs. A large appetite with a concomitant loss in weight is characteristic—the “neuro’s” appetite is variable and there is seldom marked weight loss. In young people the blood pressure may be 140/60. In patients over 40 it is usually 160/80 or higher. Note the high pulse pressure, the difference between systolic and diastolic. There is no tendency to hypertension. There may or may not be fever. The fingernails tend to separate from the matrix for an abnormal distance. Characteristic crises occur in which there is great weakness, nervousness even to dementia and associated nausea, vomiting, and diarrhea. Such crises occur much less frequently in toxic adenomata, but are often seen when there is an associated parenchymatous hypertrophy, extra-adenomatous. Some cases show jaundice from toxic hepatitis. Basal metabolic rates are useful in checking one's clinical judgment of the patient's condition. With an accurately controlled machine, the basal metabolic rate is of the utmost help in separating the nervous cardiac patient and the neurasthenic type from the true hyperthyroid patient.

E. Mixed Type of Hyperthyroidism—The greatest difficulty in classification, diagnosis, and treatment lies in the mixed type of goiter with adenomata present in an exophthalmic goiter or in adenomatous goiter with an associated paren-

chymatous hypertrophy as in exophthalmic goiter. It must be because of the frequency of this type of disease that conflicting reports are heard regarding the efficacy or harm of Lugol's solution and why it is being recommended more and more for both types—exophthalmic goiter and toxic adenomata cases. This also may explain why prolonged use of Lugol's solution even in what is thought to be clear-cut exophthalmic goiter, does not permanently cure and really does harm, for with adenomata present, buried beyond recognition, we see iodin accentuating hyperthyroidism after the first preliminary short benefit. The symptoms and signs of these cases are a mixture of the toxic adenoma and the exophthalmic goiter patient with either one or the other predominating.

PATHOLOGY

Before discussing the treatment of the different types of goiter it is well to review their pathology, for here again the tissue changes underlying the different clinical pictures lend a guiding hand in treatment as well as prognosis, especially if the clinical diagnosis has been in doubt.

It should be emphasized at the start, however, that one cannot always tell from the examination of the tissue just what clinical state of toxicity existed in the patient at the time of thyroideotomy. This is particularly true of the adenomatous type of goiter with hyperthyroidism. Then again the histologic picture of the gland in cases receiving iodin for several weeks often shows involution changes, so marked that the diagnosis of exophthalmic goiter or of parenchymatous hypertrophy in an adenomatous goiter from tissue alone is difficult. A pathological classification, however, is useful and will definitely separate the adenomatous and the exophthalmic goiter disease groups. Let us look at them first from the gross, and then, the microscopic standpoint. In the gross alone there really are but three types of glands.

First, the smooth, thyroid-shaped or so-called butterfly goiter seen in simple colloid or adolescent cases and in the true exophthalmic or Graves' disease. Second, the nodular, irregular thyroid of the adenomatous group, toxic or non-toxic. Third, the mixed type, which, however, cannot be told in the gross before section. On section, in the gross, the cut surface in the colloid goiter is, as the name implies, glairy, sticky, and jelly-like, gray in color and with varying amounts of stroma and colloid. The exophthalmic type has a meaty appearance with little or no colloid escaping from the cut surface, unless Lugol's solution has been given for a few weeks. The color is that of partly cooked beef. The nodular, irregular, lumpy adenomatous type of goiter on gross section presents a varied picture, depending upon the admixture of varying amounts of colloid material, stroma, and the product of hemorrhage with its cyst formations and degeneration. Large collections of colloid substance surrounded by fibrous tissue envelopes are characteristic, and it is the hemorrhage into these that gives varying degrees of degeneration with ultimate fibrosis, hyalinization, and even calcification. The mixed type contains, as the name implies, varying amounts of adenomata and solid homogeneous tissue.

Microscopically there are five fairly distinct types of goiter, which, however, are usually confusing because of a tendency for two types to be present in one gland.

1. Simple, colloid or adolescent goiters show the enlargement due to an increased amount of colloid stuffing the acini and flattening out the epithelial cells. There is little cuboidal and no columnar epithelium. The gland is not vascular.

2. Exophthalmic goiter (Graves' disease) shows microscopically a marked hypertrophy of the epithelial cells lining the acini, changing the normal cuboidal or flat cell into a tall columnar affair. It is well to distinguish between hypertrophy as used here applied to epithelial cells, from the so-called hypertrophy of colloid material in simple goiter. There is also a multiplication of the number of cells or a true hyperplasia. The acini are small and their lumina contain little or no colloid material. There are, however, numerous fields of hypertrophied parenchymatous cells projecting into the cavity of the acini. The lymphatic and blood vessels are distended. Lymphocytic infiltration is a feature in most cases and it is thought indicative of a certain amount of thyroiditis. An estimation of the amount of thyroiditis may be helpful in prognosis, as it has often been noted that the gland with an excessive associated thyroiditis is the one about to go on to hypothyroidism postoperatively. The involution changes mentioned above after Lugol's solution have been well described among others by Rienoff¹² and Giordano,¹³ and are as follows: Colloid material dilates the acini, producing a cystic condition so that the epithelial lining of the acini changes from a tall, columnar to a cuboidal or even flat type. The infoldings in part disappear and masses of cast-off degenerating epithelial cells may be seen in the

acini. There is a relative increase in fibrous tissue. However, there are usually present some areas of the gland which show true parenchymatous hypertrophy from which a diagnosis may be made.

3. Adenomatous goiter, non-toxic. Microscopically the non-toxic adenomata show many areas little different from a normal thyroid and in other areas flattening and even absence of the epithelium lining the colloid or hemorrhage-stuffed acini. Masses of undifferentiated fetal cells abound in almost all adenomatous goiters.

4. Adenomatous goiter, toxic. This gland differs from the non-toxic in one respect only and that is that it contains certain areas of hypertrophy of the parenchymatous cells lining the acini with a change from flat or cuboidal to a columnar type of cell and with infoldings of these enlarged cells into acini even as is seen in exophthalmic goiters.

This is the type of goiter in which the pathologic tissue picture is less apt to mirror accurately the clinical condition of the patient. Although the microscopic picture of the gland at times shows associated parenchymatous hypertrophy in a degree comparable to the toxic state of the patient, it does not always give one an accurate estimation of the state of clinical toxicity.

5. Mixed type. The mixed type of gland shows either a predominantly adenomatous type with an associated parenchymatous hypertrophy either intra- or extra-adenomatous or a true exophthalmic goiter type with adenomata buried in its substance. The mixed type of gland with adenomata buried in hypertrophic parenchymatous tissue or the exophthalmic with associated adenomata is often correctly diagnosed by the pathologist, but the clinical state of toxicity is here again difficult to predict. The giving of Lugol's solution for long periods preoperatively makes the pathologic differentiation of the excised glands more difficult than formerly.

To sum up the pathology, then: The simple colloid and the exophthalmic goiter glands are accurately recognized. The nodular adenomatous goiter, be they toxic or non-toxic, fall into one group. In the gross, differentiation between these two is not possible, and in the microscopic study, though in a fair percentage of cases a pathologist can pick out the toxic cases, the general average of correct diagnoses is not sufficiently high for practical purposes.

PREVENTION

Before taking up the treatment of goiter it is well to say a few words about its prevention. This is, of course, accomplished insofar as our present knowledge permits in the judicious use of iodin. Remember that the cause of goiter is as yet not known. McCarrison¹⁴ has shown through feeding experiments that iodin deficiency is the chief known factor involved in goiter production. He states that it is either a breakdown in assimilation in the intestinal canal and cites fecal bacterial contamination in unhygienic conditions as a cause of iodin deficiency or a breakdown in utilization of iodin by thyroid or body cells after absorption. The lack of iodin plus the

unknown "X" then gives a colloid goiter. Iodin is given to prevent this. If colloid is already laid down, thyroid extract enough to bring metabolism to normal is given to dissolve the colloid.

Iodin is given as prophylaxis hesitatingly in some instances, for fear of causing a normal gland to "hyperfunctionate." No amount of iodin will do this. If harm is done, you may be sure small unrecognized adenomata were present to be whipped into action. It should never be prescribed prophylactically in the presence of adenomata. Marine and Kimball¹⁵ have shown in school children in Akron, Ohio, that the danger of giving iodin to children in this country is negligible, even if a small colloid goiter is present. This holds up to the age of 20. The older the patient and the larger the goiter the more likely is the gland to contain adenomatous tissue, although palpation may fail to reveal its presence, and the more danger in giving iodin.

Iodin administration affecting an entire community such as iodized salt or an iodized water supply seems quite inadvisable because of the certainty of producing hyperthyroidism in quiescent adenomata present in a colloid or otherwise normal thyroid gland. Prophylactic measures should apply particularly to children and consist in giving iodin in the form of sodium or potassium compound in the amount of one-tenth grain once a week between the ages of 11 to 17, as recommended by Marine. It is important to give child-bearing women of goiter families prophylactic iodin also, for this prevents goiter both in the mother and the child.

To repeat, then, iodin as a preventive measure against goiter, is absolutely safe for children who do not have goiter. It is quite safe in children with small colloid goiters up to the age of 20. For patients over 20, for young patients with large goiters, or for those in whom nodules can be felt, it should not be given or hyperthyroidism might result.

TREATMENT

Let us emphasize again that the proper treatment of thyroid disease depends upon the recognition of the type of goiter in question. The different types are treated as follows:

1. Simple Goiter (Colloid)—Treatment is medical unless adenomata or toxicity develop, and consists in the administration of small doses of iodin to the small and early cases and desiccated thyroid to the larger ones of long standing. Iodin alone will not always produce absorption of colloid already laid down. In giving thyroid extract symptoms of increased basal metabolism must be carefully watched for and, if practicable, basal metabolic rate estimations done from time to time. Remember that the effect of desiccated thyroid or thyroxin is cumulative—the one day's dose often reaching its maximum effect a week later, and taking two to three weeks to entirely pass off. Nervousness, tremor, palpitation, and tachycardia are early symptoms of overdose and if the drug is continued, headache, pains, and aches in

the muscles and bones with loss of appetite and nausea follow.

2. Adenomatous Goiter Without Hyperthyroidism—It is safe to say that one in four,¹⁶ 25 per cent, of this type of goiter becomes toxic after the age of 35. They should therefore be considered surgical if the adenomata reach three-fourths of an inch or more in diameter and if the patient is over 30 years of age. It is because adenomatous goiters tend to recur, if removed at an early age, that we delay operation to age 25 at least. Disfigurement and pressure symptoms also call for operation. Iodin should never be given.

3. Adenomatous Goiter with Hyperthyroidism—It is because the symptoms of hyperthyroidism in these cases are due to the fact that the goiter has begun to throw out into the circulation an increased amount of normal thyroxin that iodin is not required. Lugol's solution is given, however, for a few days previous to operation for fear of there being unrecognized, associated parenchymatous hypertrophy which might throw the patient into a postoperative crisis, if iodin were not given. All cases are considered surgical, if patient is over 25 years of age, which procedure is curative provided the adenomata are removed before vital organ degeneration has progressed to any extent. Recurrence is rare if the operation has removed all adenomata. Cardiac symptoms predominate, but often clear up on rest in bed alone without giving digitalis. If the cardiac decompensation and auricular fibrillation persist, a digitalis compound may be given. However, it is well to discontinue it for a few days before operation. It seems fair to suppose that quinidin may be substituted for digitalis at this stage.

4. Exophthalmic Goiter (Graves' Disease)—Operation is indicated if the patient is seen before or after a crisis, but never during one. Rest in bed and Lugol's solution are usually all that is necessary to prepare most patients. Basal metabolic rates are necessary in checking one's clinical judgment of the patient's condition. All cases should be operated upon after appropriate pre-operative treatment, if aged 25 or over. If another surgical condition is present, thyroidectomy should be done first unless it is an emergency, such as ruptured appendix, duodenal ulcer, or some such catastrophe.

There is about a five per cent chance of recurrence which might make a second operation necessary or the use of x-ray treatment advisable. It has not yet been demonstrated that iodin actually cures exophthalmic goiters. Doctor Boothby¹⁷ says: "The drug improves and apparently holds in abeyance the nervous, mental, and gastro-intestinal symptoms which are so characteristic of exophthalmic goiter. It also prevents the development of the fatal postoperative exophthalmic goiter crisis. The metabolism is remarkably decreased in about one-third of the cases, somewhat less markedly affected in another one-third, while in the remainder, no demonstrable effect in the metabolism is produced. In general, therefore, according to the evidence available at the present time, iodin should be advised with few excep-

tions, only as a temporary therapeutic measure, in the treatment of exophthalmic goiter to bring the patient into a safe condition for a partial thyroidectomy."

5. Mixed Type—According to our classification this is a toxic goiter and should be treated surgically after appropriate preoperative preparation. Lugol's solution is indicated, for as the name implies, part of the hyperthyroidism is due to iodin-deficient secretion of the hypertrophic parenchymatous part of the gland. Iodin does not cure.

PREOPERATIVE TREATMENT

The principles of this treatment consist in restoring body fluids, replacing reserve glycogen and body weight, and increasing hemoglobin and reducing nervous tension.

This is accomplished by giving a high caloric diet, 3000 to 5000 calories, dependent somewhat upon appetite, forcing fluids, saline and glucose solutions by subcutaneous proctoclysis, or intravenous routes, and occasionally by giving transfusions. Crile¹⁸ has shown that transfusions of whole blood not only improve hemoglobin and increase body fluid, but have a very beneficial effect on a goiter toxic patient's nervous syndrome. I have found that the administration of salt solution intravenously seems to benefit very sick patients more quickly if given slowly and repeatedly in large amounts than when given by the subcutaneous method. Glucose solutions should also be administered this way. Sedatives are given freely. Patient should rest but not be made bedridden, being allowed up as much as possible.

LUGOL'S SOLUTION

The exophthalmic goiter is the type par excellence which requires iodin in its treatment, for, as Kendall¹⁹ has shown, the thyroid gland is throwing into the circulation an excessive amount of abnormal thyroxin whose molecule is deficient in iodin. The exophthalmic goiter patient needs iodin. Iodin is administered preferably in the form of Lugol's solution, which is the U. S. P. Liquor iodi compositus. It contains 5 grams of iodin and 10 grams of potassium iodid in 100 cc. of water. In each cc. of the solution there are 126 mgm. of iodin; in 10 cc. 78 mgm. or 1.2 grains. If the patient vomits Lugol's solution, repeat the dose immediately and repeatedly until it is retained. Patients soon tolerate it. It may be given in subcutaneous fluids, by rectum, or even by duodenal tube. It is best given in the average case in grape juice, and in amounts of ten to forty drops three times a day, depending upon the toxicity of the patient. Too much is rarely, if ever, given and often a far too small amount is tried. Its beneficial effect starts in from two to four hours and lasts eight to ten days, stopping the extreme nervousness and vomiting following crisis. However, the basal metabolic rate does not start down until from eight to fourteen days. Lugol's solution is given for a short period preoperatively to exophthalmic goiter patients, and postoperatively for two or three months in the very toxic cases. It may be used as a diagnostic test, for if given for two

weeks preoperatively with failure to reduce the pulse rate and the basal metabolic rate, as it usually will in a pure exophthalmic case, you are dealing with a toxic adenomata or a mixed type of case. It is well to give a large dose of Lugol's solution per rectum for several doses in a case of exophthalmic goiter in crisis with vomiting. No discussion of the use of Lugol's solution is complete without emphasis of the note of warning resounding from all sides that the indiscriminate use of iodin for long periods of time in almost any type of goiter is doing untold harm to many patients. The lay public is grasping at Lugol's solution as a panacea for all goiter disease. Doctors should prevent this.

POSTOPERATIVE TREATMENT

This consists in a continuation of medical regimen as outlined preoperatively with addition of more sedatives and for a time increased amounts of Lugol's solution. Morphin sulphate may be used freely. Special alertness must be exercised by the attending physician to recognize and appropriately handle the many postoperative complications which may arise, such as infection, tracheitis, laryngitis, tetany, and cardiac decompensation, and especially a rapidly developing bilateral hydrothorax. The avoidance of operative and post-operative deaths and complications depends upon a painstaking and conscientious cooperation between the surgical, medical, and laboratory services. Such teamwork is essential to the proper handling of toxic goiter patients. This is seldom available outside of the large hospital or clinic.

OPERATIVE INDICATIONS

The indications for operation are:

1. Increasing quadriceps power.
2. Gaining weight.
3. Lessened nervous instability.

It is best if the basal metabolic rate is reducing, but this is a variable factor. Always operate upon the thyroid first if disease is present in some other organ also. Secondary infections in toxic goiters subside on Lugol's solution. It is well to double the dose of Lugol's solution the day preceding, during, and after an operation.

X-RAY TREATMENT

At present the x-ray treatment of goiter is where its surgical treatment stood twenty years ago. Sufficient statistical material on treated cases is not yet available for a just comparison with those treated by surgery. Until x-ray has proven of more definite value it seems fair to state that it should be used in cases under twenty years of age, very early cases, and in a selected group of cases where for some reason operation seems inadvisable, and postoperatively where further destruction of gland tissue is needed.

It should be borne in mind that even surgical treatment is but one of the many steps in the successful treatment of a goiter-bearing patient, which if undertaken alone without pre- and post-

operative medical and laboratory supervision, will often result disastrously.

SUMMARY

1. The most important point about thyroid disease is recognizing goiter early before vital organ degeneration has taken place.
 2. Next we must accurately differentiate the type of goiter and the degree of hyperthyroidism present in order to give the proper treatment.
 3. The commoner types of goiter are:
 - (a) Colloid goiter (simple colloid hypertrophy, adolescent, diffuse colloid).
 - (b) Adenomatous goiter without hyperthyroidism (non-toxic adenoma).
 - (c) Adenomatous goiter with hyperthyroidism (toxic adenoma).
 - (d) Exophthalmic goiter (Graves' or Basedow's disease (hypertrophic parenchymatous thyroid).
 - (e) Mixed goiter with hyperthyroidism.
 4. Pathologic tissue examination divides the commoner types of thyroid glands into simple colloid goiter, exophthalmic goiter, adenomatous goiter and a combination of the last two, but fails to indicate accurately the clinical state of the patient in adenomatous goiter; *i.e.*, toxic or non-toxic, in a sufficiently high percentage of cases for practical use.
 5. The administration of Lugol's solution produces a cystic and colloid replacement of the hyperplastic and hypertrophic parenchymatous cells in both toxic adenomata and true exophthalmic goiter glands.
 6. Prevention of goiter by iodin administration is absolutely safe for school children, but dangerous for older people who may have adenomata in their thyroids. Therefore it should be given individually and not wholesale as in iodized salt or water.
 7. Lugol's solution does not in itself cure exophthalmic goiter, being merely the most important adjunct to surgery or x-ray treatment. It should never be given to patients having non-toxic adenomatous goiters, but should be given to those who suffer from the adenomatous goiters with hyperthyroidism, and to patients with the mixed types, for a few days preoperatively for fear of an associated parenchymatous hyperplasia and hypertrophy.
 8. A careful and conscientious cooperation between the surgical, medical and laboratory services is essential to the proper handling of thyroid disease, and such teamwork is seldom available outside of the large hospital or clinic.
 9. A properly conducted and controlled basal metabolic rate machine is essential to the proper handling of disease of the thyroid unless one has had years of experience with such patients.
- Woodland Clinic.
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UNILATERAL SIGHTING*

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Discussion by Roderic O'Connor, M. D., San Francisco; Frederick C. Cordes, M. D., San Francisco; P. Obarrio, M. D., San Francisco.

A REVISION of the current explanations of the physiological and optical phenomena of binocular vision is resulting from the recent work of Parson¹ and from that of the author,² on eyedness and handedness.

Sheard³ says, in discussing this work editorially, "Our clinical tests upon the elements of convergence, fusion powers and muscular insufficiencies are based upon the principle of triangulation, in which the line joining the nodal points of the two eyes—or interpupillary distance—serves as the base of the triangle, while the point of fixation is made to lie on a line drawn as perpendicular bisector to the base line so that the distances from the nodal point of each eye respectively to any point on the median line are equal. Binocular single vision is thus graphically diagrammed and discussed as though each of the two eyes was equally dominating and directing

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and that, as a result, the most accurate fixation, from the standpoints of ease, comfort and proper location in space of any object, would occur if the object fixed was located on the median line perpendicular to the ocular base line so that equal amounts of accommodation and equal amounts of actual turning in or convergence of each eye should be involved. In the bulk of cases no such ideally simple arrangement exists and equal division of labor probably is not present. In cases of right-eyed dominance simple tests show that, ordinarily, the object fixed is definitely located and sighted by the right eye, and that the visual triangle, insofar as binocular single vision is concerned, is a right-angled triangle with the right angle subtended at the nodal point of the right eye. The angle merely is reversed in left-eyedness.

The comparative constancy of this relation which exists between the right eye and hand, and the left eye and hand, in spite of binocular vision and of the projection of both maculae into both hemispheres of the brain, justly has provoked great speculative interest.

Many untenable explanations have been given, but the opinion usually held was that we are right-eyed because we are right-handed. Gould,⁴ in 1908, put forth the idea, widely accepted at the time, that "handedness depends upon which is the better-seeing eye." Parsons (q. v.), who is drawn upon freely here, took the subject out of the realm of speculation and for the first time placed it upon its factual feet by his demonstration of the optical necessity for unilateral sighting. He concluded that "handedness is caused by a functional limitation of binocular vision which necessitates the exclusive use of one eye for all sighting or aiming operations and therefore for many of the most important manual activities. The fact that these visual operations are carried on monocularly leads inevitably to the preferred use of one hand—the hand nearer the sighting eye" for the greatest anatomical and physiological advantage. "Every consideration of speed, accuracy and economy of muscular effort demands this intimate correlation of eye and hand on the preferred side."

It was my privilege to extend and amplify Parsons' basic work by an independent and equally basic study⁵ of the effects which eyedness, and posture⁶ resulting therefrom, produce in the position, muscular behavior and refractive state of the eyes, and of the greater susceptibility to refractive and pathological change seen in the non-fixing eye. Four groups of dextrals and sinistrals were identified in this study: (1) The pure dextral is right-eyed and right-handed. The left eye is cyclophoric and diverges when a test object is brought nearer than the convergence near point. About 76 per cent are pure dextrals. (2) The pure sinistral includes 9.3 per cent and is left-handed and left-eyed. The right eye is cyclophoric and diverges in the near test. (3) The crossed dextral is left-eyed but right-handed, usually by training. The right eye diverges in the test. About 13 per cent are included in this class and about 1.7 per cent in 4, the crossed sinistral, who is right-eyed but left-handed. The

left eye usually diverges upon test although the right may diverge.

It was shown in this study that the cyclophoric eye practically always is the non-fixing eye and therefore that the identification of cyclophoria at once gives the clue to the native state of eyedness and handedness.

It was further demonstrated that, while training, accident or disease may reverse the manuality of the individual, eyedness, i. e., the exclusive use of either the right or left visual line for sighting, persists most tenaciously throughout life, requiring severe ocular disease early in life or practical blindness in adults to cause its reversal. This fixity of the unilateral sighting line under the most adverse conditions is additional proof of the dominance of the corresponding cerebral hemisphere and is wholly in keeping with that general asymmetry of structure and function of the limbs, brain and all the paired organs which distinguish man from all other primates, in whom monocular sighting fluctuates laterally as needed. It is interesting to note⁶ in this connection that the earliest known human fossil skull shows, by a cast of its brain case, a large lunate sulcus upon the left hemisphere, a reversal of what is normal in right-handedness and proving the original sinistrality of the individual. Riese,⁷ records the asymmetry of the surface markings of the brain of several prominent left-handed individuals in favor of the right hemisphere and states that in the case of a gifted left-handed artist, a considerable surface enlargement of the right occipital visual area was regarded as the anatomical expression of the drawing talent of the man. Riese states that "left-handedness and the corresponding domination of the right cerebral hemisphere are based on a definite anatomical organization of the brain." The mere reversal of manuality by training obviously cannot reverse this fundamental background.

The function of each eye in purposeful vision requires restatement and further emphasis. The dominant eye, variously called the fixing or fixating, the orienting, directing, dominant, master or sighting eye, as implied by its various names, has the main function of sighting in its own line of vision. Its fellow eye, with equal significance, has been named the non-fixing, non-sighting, deviating and especially the moving eye, all carrying movement as the chief idea. These original meanings referred to the separate actions of the two eyes in distance vision, but I have shown that these separate actions are even more apparent in the near test mentioned above when the aperture of a retinoscopic mirror is fixated and is carried nearer than the convergence near point. I know of no single, simple eye test which is more revealing than this one.

May I recall the facts of physiological diplopia? It has long been known that objects nearer than the point of fixation and the horopteric surface connected with it have crossed images, while all objects beyond the point fixed have homonymous images. This diplopia exists constantly in man, the images of each eye reaching consciousness entirely separate and distinct but ordinarily without producing diplopia owing to suppression of

or lack of attention to the weaker image of the non-fixing eye. This may be shown by fixing an object five to eight feet away and in the median plane, with both eyes open. If either index finger is pointed at this object along the presumed line of sight the finger will be doubled heteronymously. On closing the eyes in turn the image of the finger is found interposed laterally, not mesially, along the line of sight of one eye, the right eye in the pure dextral and the left in the pure sinistral, regardless of which hand is used in pointing. Now if the gaze be shifted slowly from the point of attention to the finger itself, we note that the "double images in process of combining into a single image do not seek a midway fusion point, but that in the right-eyed the image belonging to the right eye remains stationary on the right visual line, while that belonging to the left travels the entire intervening distance in order to unite with its fellow image. In other words one of the heteronymous images is unmistakably a true one." It is apparent from this simple experiment and from other work of Parson, Duane⁸ and the author, that the particular function of the dominant eye in exact sighting is to give direction and position by fixating the object in its own line of vision. The task is given to the moving eye of converging to the extent of producing binocular single vision. This truly "moving eye" gives the final judgment of distance, dimension, depth and relief, the qualities of solid or stereoscopic vision, by means of the nervous impulse necessary to produce the needful degree of convergence and by the proprioceptive muscle sense involved in the actual movement. This difference in ocular movement can be seen at times on simple inspection of the test subject where there is moderate exophoria. A small but definite interval often is evident to the subject, in moving from one point of exact fixation to another a few feet away, before the non-sighting eye reinforces the master eye and the momentary indistinctness is overcome by fusion of the foveal images, and by the needful amount of accommodation. The impulse to fuse the two foveal images must be compelling in an apparatus so sensitive that adjustments of one-quarter of a degree between two visual lines can be detected with constancy and where visual acuity drops so sharply and rapidly away from the macula that it is only one-fifth of normal two and one-half degrees from the point of attention.

Sheard (q. v.) in discussing our work and its application to tests for ocular muscle tonicity, imbalance and its correction by prisms, confirms our own written opinion and that of Dolman⁹ and of Savage¹⁰ by his statement that "the distorting or dissociating device should always be placed before the non-fixing eye. By such a procedure the directing eye looks at the natural test object and definitely fixes it, while its mate, naturally accustomed to moving into coördination with the directing eye, will readily disclose its latency of error in this function of convergence coördination. If, on the other hand, the dissociating device is placed before the dominant eye and the naturally non-directing eye is allowed to attempt fixation of the

test object, a conflict of function immediately is set up and an uncertain, vacillating state of affairs is present."

THE RELATION OF UNILATERAL SIGHTING TO SPORTS

The relation of unilateral sighting to sports is of much interest and of some practical importance. Persons with right manuality often are discovered to be left-eyed by their indifferent or uncertain golf, shooting, tennis, baseball and other branches of sport. It is a foregone conclusion that in these games, played with both eyes open, the crossed dextral and sinistral classes are at an anatomical and physiological disadvantage compared with the pure dextrals and sinistrals, whose sighting line and preferred hand are on the same side and work together naturally. The intimate grouping of the principal motor centers is disarranged in the crossed classes and, in the transfer of part of their activities to the other cerebral hemisphere a certain amount of indecision and awkwardness often is apparent. So long as the crossed dextrals do not strain or press and merely use muscle sense and two-eyed vision they shoot and play games reasonably and at times very well, but when they become particularly anxious, by the very nature of ocular dominance, they must pick up their alignment with the left eye and miss widely to the left. In other words, when exact sighting is necessary, binocular vision is replaced by monocular vision and the sight is brought into line with the object by the master eye along its line of vision. The trained normal shot involuntarily falls into gun alignment by muscle sense after one-eyed alignment is made, the two actions almost blending. Those who shoot from the right shoulder but who are blind in the right eye have only the problem of visual acuity to deal with, as they have monocular vision and none of the distractions of physiological diplopia. The main disadvantage of obligatory monocular vision is that in shooting at a moving object this object must be sought for and realigned continually.

There is no reason why a left-eyed man cannot shoot from the right shoulder with accuracy if the left eye be closed, provided that his arm, hand and back muscle coördinations are equal. His success as a shot under such conditions depends merely upon his visual acuity. However, as the very fact of handedness presupposes inequality or imbalance in the shoulder girdle action, this skeletal imbalance makes for awkwardness and is the sole handicap. Rifle shooting is done, for the most part, with the moving eye closed and merely is a process of unilateral sighting in order to obtain exactness of aim. Here, other things being equal, the chief and almost the only determining factor in the relative ability to shoot from the right or left shoulder is visual acuity. Where rapid rifle fire without exact aim is necessary the visual problem is identical with that of the shotgun, i. e., the rifle is put into alignment with the right eye in the right-eyed and with the left eye in the left-eyed regardless of the shoulder from which the rifleman shoots. Granting then

that a man has the temperament of a good shot, normal binocular vision and normal visual acuity, his success as a shot will depend upon the harmony of action of the corresponding eye and hand, or the lack of it. It is elementary optics that with both eyes functioning equally there is no such thing as accurate sighting.

Two other main points of interest have arisen out of this work. The first is that the determination of native handedness should be considered as an essential test in all orthopedic examination and especially in its application to the correction of postural defects. It is difficult to see how correct native skeletal and muscular balance can otherwise be restored in the 15 per cent of all patients who form the crossed dextral and sinistral groups.

Finally, my attention repeatedly has been drawn to the nervous instability of the children who make up these crossed groups. It may have been coincidental or of great significance that all of the choreic and choreiform children whom I have seen in the past nine years of this investigation have been crossed dextrals or have been frankly left-handed children in whom an attempt has been made to force them into full dexterity or a certain amount of it. The attempt never has been made, but it is here suggested that the deliberate re-education of this type of patient to frank left-handedness and full left-sided dominance, probably regardless of age, is a possible means of re-establishing nervous control.

The whole background of the matter of handedness is contained in Parson's statement, "It will be better understood if we conceive of the sighting line as belonging not to the eye and the hand but to the whole body." Considering then that the master eye is "the organism's sighting line," deviations from the inherited relation of eye and hand should be prevented in early childhood by the earliest possible recognition of what should be normal for the individual and by the maintenance of this normalcy.

SUMMARY AND CONCLUSIONS

1. The idea that a given object is sighted by both eyes along a line midway between the eyes, the effort requiring equal amounts of convergence and accommodation, optically is untenable.

2. One eye always dominates the other. The right eye is the master in the fundamentally right-sided, about 78 per cent, and the left eye in the fundamentally left-sided, about 22 per cent. This true ratio of right- and left-eyedness and handedness, 1 to 4, is concealed by training to right-handedness.

3. The line of sight is on the side of the dominant eye and, therefore, is right or left lateral. Manuality may be reversed by training, but the line of sight is fixed throughout life unless reversed by severe ocular disease early in life or by practical blindness of the master eye in adult life.

4. The two eyes have different functions in exact sighting, the dominant eye fixing the point of attention in its own line of vision, while the moving eye, by its actual movement of convergence to produce binocular single vision, giving

the final judgment of distance, dimension, depth and relief.

5. Right-handed persons often are discovered to be left-eyed by their indifferent or uncertain golf, shooting, etc. In all sports the crossed dextrals and sinistrals are at an anatomical and physiological disadvantage, as their sighting line and preferred hand are on opposite sides, disarranging the natural relation of the principal motor centers.

6. The determination of native sidedness (handedness and eyedness) should be a basic test in all orthopedic procedure concerned with the correction of postural defects.

7. Nervous and mental instability apparently is more common among the crossed dextrals and sinistrals than among the pure dextrals and sinistrals. The suggestion is made that the deliberate re-education of these classes to their natural full left-sided dominance may be an important factor in re-establishing nervous balance.

8. Native dominance of either side of the body should be recognized as early as possible and deviation from the inherited relation of eye and hand prevented.

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DISCUSSION

RODERIC O'CONNOR, M. D. (909 Hyde Street, San Francisco)—Doctor Mills very considerately sent me his paper to read knowing probably that it could not be properly discussed offhand simply from hearing it. This gives me the opportunity to take up each heading as he covered it.

1. Convergence. The non-fixing does not always fail first in this test. Vertical deviations, apparent or hidden, have much to do with convergence, and I have seen many apparent cases of insufficiency of convergence disappear on correcting the vertical deviation by prism or, if of high degree, by operation.

2. As regards the non-fixing eye being the one to give us ideas of distance, perspective, etc. In 1910, while a Major in our regular Medical Corps, I published a paper on "The Relations of the Eyes to Rifle Shooting" in which I mentioned the question of the dominating eye as follows: "The judgment of absolute distance by the aid of convergence is very uncertain, but the ability to tell whether one object is farther than another by the amount of convergence necessary to maintain binocular vision is very acute. This is so because in binocular vision the lines of vision intersect at the object seen. Therefore the slightest difference

in distance must be appreciated in order to maintain binocular vision. This brings up the question, does one eye do all the converging or do both eyes converge equally? And this in turn brings us to a consideration of the dominating, fixing, or sighting eye. About the same proportion of people are right-eyed as are right-handed, and this may account for the occasional man who is unable to shoot from the right shoulder because the left is his sighting eye; and this in spite of normal vision in the right eye. One can easily determine which is the sighting eye by aligning, with both eyes open, the point of a pencil on a mark. While doing so close each eye in turn and the one that maintains the alignment is the sighting eye. In the vast majority of people it is the right eye. Now if, while holding the point on the mark the focus is changed to the point which produces convergence to that extent, the mark still being seen hazily, and then the non-sighting eye is closed, it will be found that the alignment is still maintained. This would appear to prove that the non-sighting eye did all the converging while the sighting eye kept the same line of fixation. The advantage of this is evident—the entire muscular effort is appreciated by one group of muscles instead of being divided between two groups, which would mean a finer judgment." This experiment is practically the same as that given by Doctor Mills to prove the same point.

3. As regards the eye before which to place the Maddox rod. I always make two tests, one with each eye fixing in order to find any tendency to non-comitancy (paresis). In the absence of such it is rare to find an appreciable difference in the results. But then, as shown by Marlow and myself in our work with prolonged monocular occlusion, tests as ordinarily made are worthless in the diagnosis of muscular conditions in kind, degree, or even presence. My findings in 110 orthophoric cases, with symptoms, as given at last year's meeting of the Academy of Ophthalmology and Otolaryngology, proves this conclusively.

4. Eyedness in sports. Aside from rifle shooting I have thought of this in connection with golf. About two years ago I called attention to this matter in a short communication in *The Fairway*. It was in answer to a statement by a leading professional to the effect that the left eye was the one to "keep on the ball" as the backswing would carry the head so far around that the nose would interfere with the sight of the ball by the right eye. My contention was that the head must not turn so far as to prevent a sight of the ball by both eyes and that both must be "kept on the ball" in order to permit accurate judgment of distance, etc.

5. As regards orthopedic considerations. I have had no experience in this connection. I have, however, in ordinary imbalances and have relieved many cases of head tilting with accompanying lowering of corresponding shoulder, also blinks and facial contortions by prismatic or other correction of evident muscle deviations as well as those diagnosed by aid of prolonged monocular occlusion.

6. As to his conclusions. I agree absolutely with his first five, and admit lack of qualification to even express an opinion as to the last three. The question of the fixing eye comes up in my daily work in the following connections:

1. In using prolonged monocular occlusion in the hunt for a hidden deviation, and in making a complete diagnosis of an evident one, the non-fixing eye is the one occluded.

2. In the treatment of the lower degree of deviations by prisms. In most cases I divide the prism strength equally between the two eyes and give a full correction of any vertical. Only in definitely paretic cases do I give a greater or total allowance to one eye, the reason being that prisms change strength with angle of gaze through them. If of equal strength the increase in one keeps pace with the decrease in the other, so that the total remains the same, thus suiting comitant cases in all directions of gaze. In this connection, therefore, I do not agree with Sheard, who

suggests placing the entire prism strength before one eye—the non-sighting.

3. In relation to operative work on ocular muscles. Subject, of course, to the general principle of finding the weak muscle and of improving its power to act I try to bring eyes to parallel by working on the non-fixing eye. This cannot be done always. Cases of paretic superior rectus frequently fix with that eye adjust the position of the head to relieve the weak muscle (tilt, chin up, chin in) and either bring the other eye to parallel or permit it to go far out of position. This occurs in some cases of upshoot of one eye (spasm of its inferior oblique) associated with paresis of the superior rectus of the other eye. At the San Francisco A. M. A. meeting I demonstrated such a case in which an upshoot with inward squint of right eye was corrected by shortening the superior rectus of the left, proving the importance of finding the muscle at fault in order to avoid treating cases by rule of thumb measures, which is done too often in strabismus work. Much harm would have resulted in this case from tenotomy of the internal rectus.

The day this discussion was written two left-eyed patients were seen. One was practically emmetropic and said she was right-handed, but admitted doing some things with the left hand. The other was definitely right-handed, but had a three-diopter myopic astigmatism in the right eye not corrected till the fourteenth year. The first may have been educated out of a left-handed tendency, while the second probably was educated into left-eyedness by reason of poor vision in the right.

In conclusion I wish to compliment Doctor Mills on the results of his work, for I am in a position to understand how much time it must have taken to gather the records from which he drew his conclusions. Also to thank him for the compliment of asking me to open the discussion of a subject that is of far greater importance than would appear on superficial consideration.

*

FREDERICK C. CORDES, M. D. (384 Post Street, San Francisco)—The work of Parsons and that of Mills on eyedness and handedness has revised our idea of the mechanism of binocular vision. Reik contended this was merely a repetition of Gould's theory, which was that dominance is an adjustment due to imperfect function. Parsons' theory—and this is sustained by Mills—is that lateral sighting is a basic physical necessity due to peculiarities of our body structure and that it is an inherited tendency.

In the present paper on unilateral sighting, Mills brings out some factors that remove the subject from the theoretical field into the practical one.

The relation of unilateral sighting to sports is an interesting one and explains certain difficulties encountered in patients who complain of their inability to play golf or shoot, particularly when under stress.

Doctor Mills' observations in choreic and choreiform children is, it seems to me, an important one. The determination of the fixing eye is so simple that it might be valuable to check this on all cases of this type in the various children's clinics. Should the above observations be borne out it would be important that parents be instructed not to attempt re-education in left-handed children so as not to add one additional factor in the possible production of nervous instability.

The placing of prisms before the non-fixing eye in vertical muscle imbalance (or if the amount must be divided, placing the larger amount over the non-fixing eye) should also be kept in mind.

I feel the future of this work offers many possible practical applications.

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P. OBARRO, M. D. (350 Post Street, San Francisco)—I wish to thank Doctor Mills for giving me the opportunity of discussing his very interesting paper at leisure with the original at hand. I regret very much, nevertheless, that the limitation of five hundred words placed on any discussion is a handicap very hard to overcome, as the very nature of the subject, plus the

description of experimental data, naturally covers considerably more space.

I have, therefore, discussed the subject in detail, using about twelve pages of typewritten material, which I have placed in the hands of Doctor Mills.

The proper experimental lay-out is given in detail as well as the manner of conducting experiments that conclusively show that the matter of "handedness," as described by Doctor Mills, does not affect the basic principles concerning the production of experimental diplopia.

That in the median line the duplication of images is absolutely symmetrical.

That the slight lateral deviation of the near object will, of course, produce a slight displacement explaining the so-called right or left "handedness."

That the contention of the author to the effect that "one of the heteronymous images is unmistakably a true one" is demonstrated to be optically impossible, for in order that an image be a true one, rays of light must be exactly focused at the fovea. It is evident then that neither one of the heteronymous images is a true image not even at the time when the white target is in alignment with the black target and the eye, for at this moment the image is reproduced in the region of the macula but by circles of diffusion, and in order to procure a true image you must accommodate also, which entails in this case a converging action with immediate disappearance of the double images.

I must also differ from the author as regards his first conclusion, to the effect that "the idea that a given object is sighted by both eyes along a line midway between the eyes, the effort requiring equal amounts of convergence and accommodation, optically is untenable," for I have on the contrary demonstrated that this action is not only tenable but optically and physiologically correct.

Now as to the relation of sight in sports I claim that, generally speaking, the question of sight is of relatively secondary importance throughout the whole realm of sports and that the matter of muscle coordination, quick perception, adaptability, responsiveness, reaction to surroundings, temperamental nature and what not, plus other items, with or without regard to "handedness," constitute a proficient player, and among these the champions are the few gifted and inspired.

The creator of a symphonic poem, an immortal poet, or a clever acrobat, all seem to perform without apparent effort.

An analysis of their mode of procedure is a difficult task at best.

After writing the above I have the authority of no less a person than Bobby Jones, writing in the *Oakland Tribune* of September 30, 1927, in which he states that: "I have been asked several times what part of the ball I looked at when playing golf. In answer I have always said that I did not look at it at all, but was merely conscious of its presence. And I have tried, too, as an experiment to gaze fixedly at the ball throughout the swing, and every time, without exception, I have dug up huge masses of turf behind the ball.

"When I top a shot it is because my swing is out of its customary rhythm, usually because I am fearful of some other mishap. A quick, spasmodic back swing is ordinarily the beginning, followed by a snap at the ball which carries my shoulders up and the club out of its normal path. And there is no better cure for topping than a slow back swing. The comfortable, well-timed stroke, very rarely catches the ball above center."

This then is the gist of vision as applied to golf. I can mention several instances of a similar nature regarding trap shooting and other sports.

My records show cases of total loss of one eye; of very marked astigmatic errors with notable diminished vision in one or both eyes, etc.; cases where stereoscopic vision is out of the question. These cases

being considerably better than average at different sports, notably golf.

*

Doctor Mills (closing)—In answer to Doctor O'Connor: The non-fixing eye always yields first in my fixation tests inside the near point except in cases of esophoria where it may be necessary to use the Maddox rod, rotary prisms, or the clinoscope to determine the cyclophoric eye. It is a matter of importance that in myopia the fixing eye usually is more myopic, and myopia appears earlier than the non-fixing. The reverse appears true in hyperopia, and these apparent discrepancies, associated with the differences in ocular dominance and manuality, have confused many who have been interested in the subject of changes of refraction. These conditions really form the background upon which refraction changes are based.

I had the pleasure, in my first paper on this subject, of bringing Doctor O'Connor's paper into the literature of eyedness and handedness. In common with Savage and several others, here and abroad, he came close enough to the explanation of ocular dominance to have made his non-recognition of it a matter of regret.

Of course Doctor O'Connor now probably would correct his statement that "About the same proportion of people are right-eyed as are right-handed." The facts are that about ninety-two in one hundred are right-handed and about seventy-eight in one hundred right-eyed, a difference of about 15 per cent, which form the troublesome crossed classes.

With regard to placing a prism preferentially before the cyclophoric eye: In nearly every eye the superior obliques are weaker than the inferior obliques. Prisms base down before the hyperphoric eye call the superior oblique into action, thus helping the superior oblique of that eye to parallel the vertical axis with that of the median plane of the head. If a prism is placed base up before the fixing eye, however, its inferior oblique is called into action, thus throwing additional work on its naturally too weak superior oblique and exciting discomfort. Savage states that weakness of the superior oblique is two hundred times more common than weakness of the inferior oblique. For this reason I feel that a corrective prism should be placed entirely before the non-fixing eye where the vertical deviation is two degrees or less and that a larger amount should be placed before this eye where it is necessary to split the prism in higher degrees of error.

Many thanks are due Doctor O'Connor for bringing out the practical value of the tests for ocular dominance.

Doctor Obarrio's comments on the subject of physiological diplopia are drawn from an interesting report of experiments done by him which he was kind enough to send to me. This report is somewhat longer than my own original paper, and as it presents data which have never been confirmed and which are wholly at variance with the work of practically all recent authorities, it would appear unwise either to draw conclusions or to make critical comment until such confirmatory evidence is at hand.

Doctor Obarrio's conclusions go back to the anciently held idea of the cyclopean eye which pays no attention to the great law of corresponding points which is back of all binocular phenomena.

His paper has been sent to Doctor Parsons for appropriate testing and report.

The proof of the findings of my near test for "eyedness" is that it works in daily practice and correlates the evidence given by the different forms of hyperphoria, cyclophoria, muscle imbalance, larger refractive errors and disease into a complete and easily understood picture.

With regard to the function of the eyes in sports, it is evident that superexcellence in any sport demands what I have called in shooting "the temperament of a good shot." Without this no local harmonies of function will ever lift the individual above mediocrity in play or work.

The numerous cases of persons having monocular

vision who have excelled in sports clearly show the adaptability of the brain and eye to new conditions.

With monocular vision, distances and localizations are gauged by the physiological double images registering on the retina outside of the macula, by the relative sizes of objects, by the parallactic displacement of objects in the foreground on those more remote, and by the effects of contrast, i. e., light, shade, and distinctness. Experience is the final factor which fixes these varying values according to individual ability.

HUNTINGTON'S CHOREA—SOME PATHOLOGICAL STUDIES*

WITH CASE REPORTS

By WALTER F. SCHALLER, M. D.

DISCUSSION by Thomas G. Inman, M. D., San Francisco; Samuel D. Ingham, M. D., Los Angeles; Glanville Y. Rusk, M. D., San Francisco.

IN neurological research it is now the fashion to investigate the motor system. Studies have taken a trend along the different lines of the old motor system, the corpus striatum and related structures in the subthalamic region and the brain stem; and of the sympathetic system.

INTRODUCTION

This paper aims to discuss briefly some of the current ideas on the mechanisms of corpus striatum disorders, and to report pathological findings in three cases of Huntington's chorea.

Ramsay Hunt in May, 1916, presented a paper before the American Neurological Association on the "Syndrome of the Globus Pallidus" in which he defined the pathology in a case of juvenile paralysis agitans as due to atrophy of the large motor cells of the globus pallidus. In four cases of Huntington's chorea which he also studied he found these large cells well preserved, but also found a wholesale destruction of the smaller cells of the neostriatum (putamen and caudate). Oskar and Cecile Vogt, from a large experience in pathological brain research, have formulated the hypothesis that lesions of the neostriatum are accompanied by tremor, chorea and athetosis, and lesions of the globus pallidus are accompanied by rigidity. The neostriatum is a terminal organ, and there is no direct connection between it and the cerebral cortex and no spinal projection system. Fibers from the neostriatum go to the globus pallidus and are inhibitory or steadyng in function. A destroying lesion of the neostriatum, therefore, is a release phenomenon, permitting a globus pallidus hyperkinesis, as of tremor in paralysis agitans. In severe lesions of the globus pallidus there occurs a rigidity from dominance of the tonus centers of the hypothalamus and brain stem to which the globus pallidus sends a projection system, principally by the ansa lenticularis and the lenticular bundle of Forel. These fibers are largely medullated at birth; on the other hand the striopallidal fibers are not medullated even in an infant of five months. It is therefore possible, according to the Vogts, to draw an analogy be-

tween the uncontrolled movements of infants and those suffering from chorea. The obvious explanation in both cases is a lack of neostriatal control.

The Vogts have further elaborated their theory by the effect of the different pathological processes at work in the neostriatum. The state of disintegration (*état de désintégration*) being a milder process, causes tremor; whereas a fibrous state (*état fibreux*) or gross lesion, being a more severe process, produces choreic movements. The fibrous state is an elective necrosis of the ganglion cells and of the finest nerve fibers, with the crowding together of the large medullated fibers, causing a striking picture.

From a large clinical experience S. A. K. Wilson has made some penetrating observations in this subject. In the disease described by him, progressive lenticular degeneration, tremor and rigidity are both early symptoms, the globus pallidus being intact. Tremor and choreo-athetosis are very different in type, and it is inconceivable that they should be caused by the same lesions. Numerous instances have been reported in which tremor and choreo-athetosis have occurred with an intact corpus striatum. Choro-athetosis, according to Wilson, is due to a lesion on the afferent cerebello-mesencephalo-thalamo-cortical paths. Wilson criticizes attempts to localize with precision the different clinical syndromes, and feels that these localizations are not justified by the present state of our knowledge of anatomy and physiology.

Of the distinguished workers in this field the names of Charles Foix of Paris and of A. Jacob of Hamburg should not be omitted. The latter investigator believes that athetoid movements in the adult are found only in globus pallidus lesions. Lesions in the corpus luisi produce tortion spasm (corpus luisi plus putamen. Thomallas case reported by Vogt). Lesions of the substantia nigra determine Parkinsonian rigidity.

HUNTINGTON'S CHOREA (CHRONIC CHOREA)

George Huntington of Pomeroy, Ohio, in the *Medical and Surgical Reporter* for April, 1872, described the disease which bears his name. His classical and lucid description has not been since improved upon. Huntington stressed the cardinal symptoms of a progressive chronic chorea in adult life, with a hereditary predisposition and tendency to insanity and suicide. Properly speaking, Huntington's chorea should be applied strictly to those cases of hereditary origin with psychic effect, but the term is now frequently applied to chronic adult chorea in contradistinction to the acute childhood form, or Sydenham's chorea. Arthur S. Hamilton in the *American Journal of Insanity* for January, 1908, analyzed twenty-seven cases of chronic progressive chorea. He states: "I can see no means of diagnosing accurately between chronic progressive chorea with hereditary predisposition and chronic progressive chorea without hereditary predisposition. To me they seem the same disease."

Glanville Y. Rusk, in the same journal for July, 1902, has written an important article on the

* From the Neuropathological Laboratory of Leland Stanford, Jr. University Medical School.

* Read before the Neuropsychiatry Section, California Medical Association, at the Fifty-Sixth Annual Session, April 27, 1927.

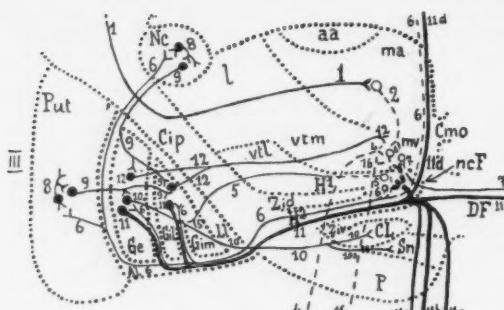


Fig. 1—Principal connections of the corpus striatum (C. and O. Vogt). Afferent pathways: (5, 6) thalamostriatal fibers. Efferent pathways: (9) striopallidal fibers; (10) lenticular bundle of Forel; (11) Ansa lenticularis.

pathology of the disease. Two other Californians besides Rusk—Andrew Hoisholt and Leo Newmark—have contributed noteworthy articles: the latter reported an isolated lesion in the putamen, although the clinical picture was that of tremor rather than of chorea.

From the pathological side, the small ganglion cell atrophies in the neostriatum have been mentioned. The essential pathological process has been described as one of degeneration with glial and connective tissue replacement of nerve elements, and the characteristic histological change as a fibrous state of the neostriatum. Winkler emphasizes the extreme atrophy of the whole corpus striatum, which in some cases may not be identified macroscopically. The neostriatum appears to be more affected than the globus pallidus. The subthalamic region is also atrophied, which may be explained by the close anatomical relationship with the corpus striatum. Numerous observers have noted atrophy of the cerebral cortex. The third and fourth cortical layers are the most affected. There is a poverty of the tangential fibers. This brief clinicopathological survey will serve as a guide to interpretations of personal material.

CASE REPORTS

CASE I—Stanford Necropsy Record XVII, 172. H. M., male, age 50, teamster, inmate of Relief Home, lived about a year after the onset of the chorea, and died of a complicating pneumonia. There was no history of a hereditary predisposition in this patient, and no history of mental disorder. The mentality was fair, but showed some defect in constructive idea association. Neurological and serological examinations were negative excepting for the constant chorea, affecting station, gait, extremities, and speech. More peripheral arteriosclerosis was present than was to be expected for his age. The lungs gave evidences of a chronic bronchitis.

After the brain was hardened in formaldehyde solution, horizontal cuts of the right hemisphere were made through the basal ganglia. The first cut was made on a level with the greatest width of the optic thalamus and the floor of the anterior horn of the lateral ventricle (Fig. 2). The nucleus lenticularis was particularly atrophied and poorly defined in this section. Another horizontal section was made parallel to the first, and 4/10 of a centimeter below it. This section through the anterior commissure and the anterior quadrigeminal body also shows a marked reduction in the size of the lenticular nucleus. Both of these sections show a marked frontal cortical atrophy. The head of the caudate and the subcortical white substance were not markedly atrophied. Nissl stains of

the cortex showed cellular atrophies of the frontal and sensory-motor cortex, manifested by small convolutions and wide sulci, but not of the occipital or temporal lobes. Measurements showed a maximum cortical depth averaging 3 millimeters. The precentral convolution showed a marked decrease in the width of the pyramidal (third) layer, and decrease in the number of cells, and a practical absence of the internal granular layer; in contrast, the Betz cells were not decreased in number. The whole pathological process was one of a slow degeneration, there being no evidence of phagocytosis or increase in cellular glia.

CASE II—Stanford Necropsy Record XVII, B. B., female. Unfortunately my record of this patient, an inmate of the Napa State Hospital, was lost in the years intervening since her death. The details have escaped my memory and the institutional case history cannot be found. Dr. G. W. Ogden, medical superintendent of the Napa State Hospital, sent me the following information obtained from the record book:

"Upon admission she was thirty-eight years of age, widow, laundry worker; diagnosed as a case of dementia praecox at that time. The cause of death was given as acute bronchitis; and contributory, exhaustion from Huntington's chorea. Inasmuch as I have only that much data, I cannot give you more information as to whether she was a true Huntington's chorea with mental symptoms, or whether she was erroneously diagnosed as a dementia praecox, and subsequently developed a chorea."

The brain was hardened in formaldehyde solution and the right hemisphere was cut in serial horizontal microscopic sections and stained by the methods of Loyez, and of Weigert. The left hemisphere was reserved for special cortical studies and for studies of meninges and blood vessels. The most apparent gross defect was cortical atrophy, loss of subcortical medullary substance and dilatation of the ventricles (Fig. 3). A section through the corpus striatum on a plane with the anterior commissure and the anterior quadrigeminate body shows a relatively normal size of the caudate and putamen, but a reduction in the size of the globus pallidus (Fig. 4). However, the projection systems of the globus pallidus, *viz.*, the ansa lenticularis and the lenticular bundle of Forel, were well marked. Gross changes in the corpus striatum in this case are not, therefore, without question. Measurements of the cellular cortex after hardening, and under control of a normal cortex, showed: maximum precentral 2½ to 3 millimeters, as compared with a normal of 5 millimeters, and a frontal depth of 3 millimeters as compared with a normal 4½ millimeters. The parietal cortex was atrophied to a less extent; the occipital cortex was not atrophied.

The degenerative process was essentially a chronic one, with deficiency of the third cortical layer or layer



Fig. 2—Case I. Macroscopic horizontal section through the right hemisphere on a level with the greatest width of the optic thalamus. Atrophy of lenticularis and frontal cortex.

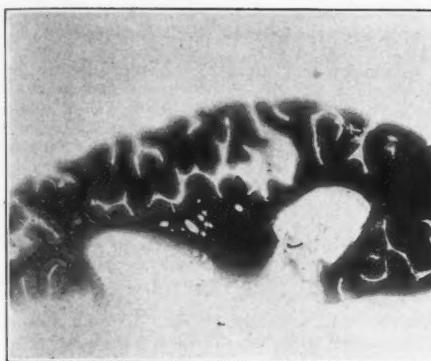


Fig. 3—Case II. Microscopic horizontal section of right hemisphere through thalamus at level of anterior nucleus. Loyez stain. Cortical atrophy. Enlarged ventricular horns. Loss of subcortical medullary substance. Lacunae in corona radiata.

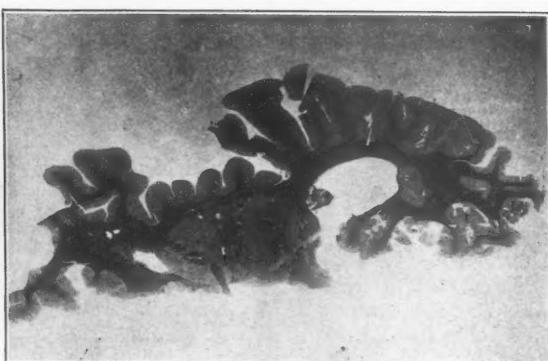


Fig. 4—Case II. Microscopic horizontal section through right hemisphere. Level of anterior commissure. Weigert stain. Atrophy of globus pallidus.

of pyramidal cells, and a scattered round cell glial proliferation. In the prefrontal cortex the inner granular layer was deficient. The Betz cells were not relatively lessened and were normal appearing. In the regions of greatest cortical atrophy the cortical fiber systems were likewise atrophied, especially noted in the suprarectal network and in the tangential layers of Exner and Baillarger. The cortical meninges showed some thickening in the frontal region and some plasma cells, but no signs of acute inflammation. The blood vessels of the cortex and of the base showed no sclerosis.

The corona radiata showed lacunae plainly visible to the naked eye and now determined to be secondary postmortem changes. Rusk (*vide supra*) discusses these changes fully in his article, and believes them to be due to a gas-producing bacterium; frequently the *B. aerogenes capsulatus*.

CASE III—Stanford Necropsy Record XX, 106. H. H., male, age 41, peddler, was under my observation for four years, during which time he was an inmate of the San Francisco Relief Home. The clinical picture was that of a typical chorea, duration between six and seven years. It affected the trunk, extremities, muscles of speech and of expression. He was well behaved, tractable, and there was no suspicion of a psychosis. A slight degree of mental deterioration was evidenced, principally in constructive idea association. No history of hereditary predisposition was obtained.

The physical and serological examination revealed

nothing exceptional except for the severe chorea. He died of a bronchopneumonia. Motion pictures were taken of this patient.

The brain was chromated. Horizontal sections of the entire cerebrum were made from above downward, and stained by Kultschitzki's myelin stain. Gross atrophy of the cortex was but slight and only demonstrated microscopically by a diminution of the radial and tangential fibers. The most noteworthy changes were found in the dilated ventricles and in the marked atrophy of the corpus striatum. The large, normal-appearing optic thalamus stood out in marked contrast to the atrophic corpus striatum. The retraction of the corpus striatum resulted in a dilatation of the anterior horn of the lateral ventricle, in contrast to Case II, where dilatation was due principally to cortical atrophy.

A section at the level of the anterior nucleus of the optic thalamus (Fig. 5) showed a flattened caudate. The globus pallidus was greatly atrophied and only identified in the lowest levels of the striatum (Fig. 6). At these levels the caudate and putamen, although much atrophied, were well marked. There was a fibrous state of the putamen.

SUMMARY AND CONCLUSIONS

Anatomical studies in these three cases of chronic chorea revealed atrophy in the corpus

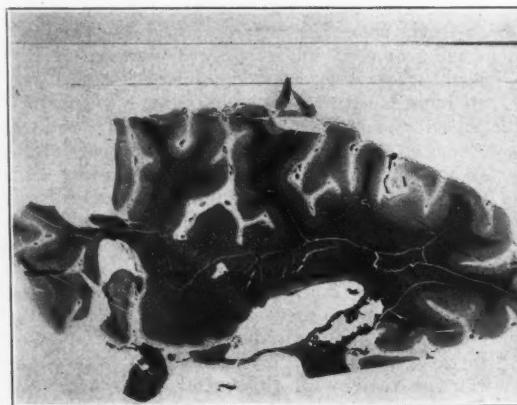


Fig. 5—Case III. Microscopic horizontal section of left hemisphere at somewhat lower level than Fig. 3. Kultschitzki stain. Flattened caudate. Narrow putamen. Enlarged ventricular horn.

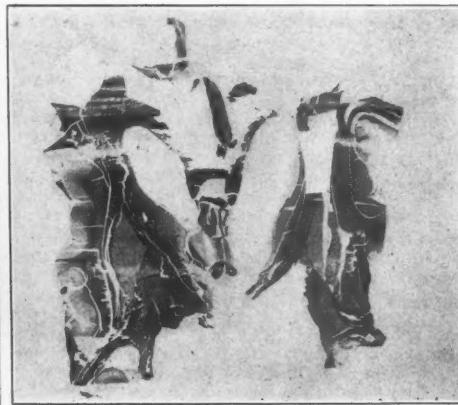


Fig. 6—Case III. Microscopic sections at the level of the anterior commissure. Kultschitzki stain. Marked atrophy of the corpus striatum.

striatum and the cerebral cortex, without evidence of any inflammatory process.

The globus pallidus was equally involved in the degeneration with the neostriatum.

The case affected with a psychosis (II) revealed well-marked cortical changes and loss of subcortical medullary substance with but little atrophy of the corpus striatum. A case (I) of short duration, and with but slight mental defect, showed moderate atrophy in both cortex and corpus striatum of about equal degree. An advanced case (III) with but slight mental defect showed marked atrophy of the corpus striatum and slight cortical changes. These variations in the relative involvement of the cortex and of the corpus striatum would speak for the anatomical and functional independence of these structures and would throw doubt on the classification of chronic chorea as a systemic disease.

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DISCUSSION

THOMAS G. INMAN, M. D. (870 Market Street, San Francisco)—From his study of the three cases reported by him, Doctor Schaller seems to show conclusively that the variations in the clinical pictures manifested by patients suffering from Huntington's chorea depend upon variations in the location and amplitude of the degenerative process responsible for the disease. His opinion casting doubt upon the systemic nature of the condition is supported by his observations and by those of other investigators, all being in agreement that no developmental relationship exists between the different parts of the brain affected. Nor can the distribution of the lesions be explained by structural contiguity.

It is difficult to understand how a disease of the nature of Huntington's chorea presenting such a remarkably diversified group of symptoms arising from pathological changes in unrelated structures should occur sporadically. This seems especially true, since the large series of Muncie—962 cases—could be traced to six or seven ancestors who originally settled in Long Island and Connecticut. Had further extension of the investigation been possible it might have been shown that one defective ancestor was responsible for the whole series. It is quite probable that some of the cases reported as occurring sporadically are not true Huntington's chorea.

Physicians interested in the subject are indebted to Doctor Schaller for his concise review of recent literature dealing with the striatal system as well as for the painstaking labor expended on his own cases.

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SAMUEL D. INGHAM, M. D. (1920 Wilshire Boulevard, Los Angeles)—Investigations of the so-called extrapyramidal portions of the central nervous system have been among the most important developments in neurology in the past decade. Doctor Schaller has given us a very good sketch of this work, in addition to his contribution of the clinical and pathological findings in the three cases reported.

Evidence already accumulated from the studies of the pathology of epidemic encephalitis indicate the importance of substantia nigra, lesions of which cause the so-called *paralysis agitans* picture, especially the rigidity and characteristic attitudes. From available evidence it would seem that various tremors and choreiform movements are traceable to lesions of corpus striatum, but this is not conclusive so far as the explanation of chorea is concerned. Acute chorea of childhood (Sydenham's chorea) offers another problem in the same line, and, so far, pathological studies of this condition have been almost entirely unproductive. It is especially to be noted that the area of the

corpora striata were apparently free from damage in cases studied by Winkelman and others.

Doctor Schaller is very conservative in his conclusions, but makes an interesting observation in suggesting that the association of chorea and psychoses may be explained pathologically by more or less independent processes involving the corpus striatum and the cerebral cortex. While his findings do not completely establish the relations between pathology and symptomatology, or answer finally any one of a number of important questions that have arisen, the same may be said of the work of any single individual. Nevertheless this work forms a link in the chain of accumulating evidence, which may eventually establish this subject on a firm basis.

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GLANVILLE Y. RUSK, M. D. (University of California Hospital, San Francisco)—With much interest and profit I have read Doctor Schaller's review of the suggestive work of others and his own critically interpreted observations. It suggests itself to me, however, that the inclusion of this group of cases of chronic senile chorea under the caption of Huntington's chorea is open to discussion. The remarkably hereditary features of Huntington's chorea are not borne out by the clinical history, either as to antecedents or in the descendants of any of the patients. The profound dementia is also lacking. Even though similar areas may be found affected in both groups of cases yet the hereditary features of the true Huntington's chorea emphasize an inborn defect, and I am inclined to look to other etiological factors as responsible for the senile chorea.

ADVANCED CANCER—EXPERIENCES IN ITS TREATMENT WITH COLLOIDAL LEAD*

By ALBERT SOILAND, M. D.
WILLIAM E. COSTOLOW, M. D.
AND
ORVILLE N. MELAND, M. D.
Los Angeles

DISCUSSION by FRANKLIN R. NUZUM, M. D., Santa Barbara; HENRY J. ULLMANN, M. D., Santa Barbara; FREDERICK F. GUNDRUM, M. D., Sacramento.

IN an endeavor to improve our results in the treatment of advanced malignant conditions by radiation, we have attempted to supplement our routine treatment with the heavy metals in colloid form. Recently there has appeared a great deal of comment in the literature on the use of gold, copper and lead in these diseases. We have experimented with all of them, but have given special attention to lead, since the reports issued by Blair Bell, coming as they did from the University of Liverpool, where they were carefully checked, seemed to offer more than anything suggested up to the present time. Because of the newness of the treatment, as well as the extreme toxicity of lead, we have been somewhat hesitant in suggesting its use in any except advanced cases which were hopeless as far as any other therapy was concerned. Many of the patients had been treated surgically; some had undergone one or more series of heavy radiation, either by high voltage x-ray or radium, while a few had had no previous treatment of any kind.

Prior to the introduction of lead in cancer therapy, many clinicians have written about the extreme toxicity of this metal when accidentally introduced into the system. It was for this reason

*Read before the General Medicine Section, California Medical Association at the Fifty-Sixth Annual Session, April 25-28, 1927.

that Bell advocated a colloidal preparation in order to reduce the poisonous effects as much as possible. Despite these precautions disagreeable reactions are the rule.

For purposes of discussion only, two typical cases will be described in detail, after which the clinical phases will be taken up separately.

CASE REPORTS

I. M.—Female. Age 50. Weight 150 pounds.

Diagnosis—Postoperative adenocarcinoma of left breast with metastases in both axillae, supraclavicular regions and the right breast. Edema of left arm.

Previous Treatment—1. Radical removal of left breast one year before, followed by rapid recurrence in the operative field.

2. Two courses of high voltage x-radiation, after recurrence was established, with temporary improvement.

Lead Treatment—Two massive doses, totaling 180 milligrams, given at an interval of ten days.

Constitutionally, there was severe nausea and vomiting for three days, accompanied by a prostrating backache. A progressive secondary anemia took place when the hemoglobin dropped from 72 per cent to 19 per cent, with a corresponding drop in red cells from 4,800,000 to 1,112,000, making a transfusion necessary. Two weeks later the blood was regenerating, as the hemoglobin was 51 per cent and the red cells had reached 2,928,000. The kidneys suffered very greatly. The urine was diminished in amount. It was loaded with albumin, casts and red cells. Though the anemia improved steadily, the nephritis became progressively worse.

Locally, the growth diminished in size; it became slightly nodular and more easily movable. Some of the skin nodules became discrete, softer and almost disappeared.

Outcome—Because of the severe nephritis incident to the treatment, it was impossible to repeat the injection. The temporary local improvement was followed by a rapid progressive increase in all the areas involved. The patient died about four months after cessation of treatment.

II. H.—Female. Age 68. Weight 150 pounds.

Diagnosis—Carcinoma of cervix with extension into both broad ligaments and down onto the posterior vaginal wall, producing almost a rectal occlusion.

Previous Treatment—Radium applied elsewhere four months previously with no improvement. Complained continuously of rectal pain and constipation.

Lead Treatment—Two doses of colloidal lead totaling 139 milligrams were given, two weeks apart.

Constitutionally, there was no particular effect after the first injection; however, after the second injection, there was an excruciating backache. The urine was passed frequently in small amounts and contained albumin, casts and red cells. There was no particular effect on the blood. The patient became irrational and remained so for three or four days.

Locally, following the first injection there was no discomfort, though at the end of ten days there had been a diminution of pain and a shrinkage of

the tumor to one-half of its original size. For the first time in three months she was having normal stools. After the second injection there was an agonizing rectal pain with a continual tenesmus. In order to see if x-radiation would improve the condition where applied to a tissue containing lead enough to produce a marked secondary radiation, she was given three high voltage treatments to the pelvic region. In about a week the mass in the posterior vaginal wall disappeared and she developed a recto-vaginal fistula. The induration in the pelvis decreased and the pain decreased as long as the stool was of the proper consistency, though morphin had to be administered frequently. The patient became very despondent and she finally had a cystitis superimposed on her other conditions. Her general condition was good, but no further treatment was advised because of fear of increasing the size of the fistula. She was sent home with a poor prognosis. Her family physician writes that she is now up and around—goes out for a ride occasionally and has little discomfort except that incident to the fistula. Whether the fistula came on as a result of the radium previously applied or whether it was due to a combination of her high voltage x-radiation and lead on the malignant tissues in the rectal wall, we are at a loss to say, but we feel that the lead itself had considerable to do with it, since after the first injection, there was such a rapid diminution in size of the growth. Needless to say there has been an arrest in the progress of the disease; how permanent, time alone will tell.

PREPARATION USED AND EFFECTS PRODUCED

The first preparation that we have used was pure lead in colloidal form, made by Bischoff of the Santa Barbara Cottage Hospital, according to directions given by Bell and his co-workers. When freshly prepared, it is jet black in color, though after a few days it gradually changes to a gray, and finally to a milky white. These changes have been ascribed to oxidation with the formation of the oxids and hydroxids of lead, to both of which the toxic symptoms are attributed. At present a new preparation of lead phosphate in colloidal form is being used in an attempt to avoid the reactions which take place. The theory on which this new preparation rests is based on the researches of Aub and Fairhall. They believe that in persons subjected to industrial lead hazards that the absorbed lead is transported in the blood stream in the form of a colloidal phosphate. Recently Professor Lewis, the chemist associated with Bell, made the statement that 85 per cent of the colloidal lead introduced into the blood for therapeutic purposes very rapidly attaches itself to the plasma phosphates and becomes a colloidal lead phosphate.

Bell is of the opinion that the lead attaches itself to the phosphatids in the cell membrane. Malignant tissue, like chorionic tissue, is richer in these constituents than normal tissue so that most of the lead which has a specificity for cells rich in lecithin and cholesterol should attach itself to the cancer cell. Unfortunately red blood cells are particularly rich in phosphatids, as are the cells of the two major organs of excretion, the liver and kidney, so they suffer greatly also. Clinically, symptoms of lead

poisoning are due to a condition of acidosis which mobilizes the stable lead phosphate into a soluble lead lactate, a toxic product. Professor Warburg of Berlin, in his work on the metabolism of the malignant cell, finds that this does not differ from that of the normal except in the case of sugars. Cancer cells have not only the power of oxidation, but also of glycogenesis, even in the presence of oxygen, so that glucose is split into lactic acid instead of being burned. In the use of colloidal lead phosphate, we have attempted to make use of this fact. We know that the latter preparation is stable, but in the presence of a localized acidosis as is found around new growths, it becomes soluble and then attaches itself to the cell wall locally as an insoluble product again. In order to intensify the reaction on the cell we have tried to increase the metabolism of the cancer cell itself by administration of glucose after the injection of the phosphate. That the lead is slowly broken up is seen in the lead line which appears and the stippling we observe, but this breaking up is so slow that the reaction is minimal.

REACTIONS

Judging from the severity of the reaction which are observed, it is obvious that the method is dangerous. When the drug is administered in the large doses recommended by Bell, the reaction is severe, while if smaller doses are used, a chronic type of lead poisoning results, manifesting itself by a progressive secondary anemia, a chronic nephritis with the urine diminished in quantity, loaded with albumin and casts. When the pure lead in a massive dose of 100 mgm. is given, the average patient goes through a regular sequence of symptoms. For at least thirty minutes after the injection nothing is noted except a tingling sensation of warmth, which seems to creep over the entire body. This is followed by a profuse perspiration and a nausea increasing to the point of vomiting, which may persist for two or three days. No instances of frank colic have been observed, though in a few patients there has been a vague feeling of indescribable abdominal discomfort. Usually in one hour there is a severe backache, evidently due to a congestion of the kidneys. The urine diminishes in amount, has varying quantities of albumin and casts, and may be loaded with red cells. In two instances the effect on the kidney was so severe that suppression and a complete anuria took place, while in a third patient a complete anuria came on six weeks after the treatment with phosphate, with fatal consequences.

The effect on the blood is especially marked. The white cells diminish but regenerate in a short time, so that the temporary leucopenia is followed by a mild leucocytosis. The red cells are rapidly destroyed, with a resultant anemia in which transfusion must be resorted to at times, for recovery. The day following the injection, the sclerae may be jaundiced, this evidently being due to a combination of red cell and liver destruction.

A few patients complain of localized pain in the tumor area, usually mild in type, though we have seen instances where it was so severe and continuous as to require the use of morphin. Where this

has taken place, there usually is a noticeable diminution of the size of the tumor.

With the use of colloidal lead phosphate, we have obviated many reactions. There is no uncomfortable sensation incident to its introduction, though in two cases we have observed chills and fever immediately after administration. Ordinarily, there are no blood or urinary changes and if these do occur they are relatively mild. Indeed we have observed an increase in the number of red cells after its introduction, but after 200 mgm. have been used, stippling, indicative of early lead intoxication, takes place. In two instances where patients had a severe pyorrhoea, a typical lead line was observed, while a third patient who had had no lead for six weeks, suddenly developed a complete anuria which proved fatal in a week.

SELECTION AND CARE OF THE PATIENT

It is apparent that in dealing with such a potent remedy, the patient must be in good physical condition. The blood and urine must be thoroughly investigated and in order to control any of the undesirable sequellae, hospitalization is required. The routine physical examination, including weight, is supplemented by a complete blood, quantitative and qualitative urinary functional tests, which may or may not include a blood urea as the case demands. Despite these precautions, disasters may result, since it is extremely difficult to forecast the individual reactions. At present this is as unexplainable as is clinical lead poisoning occurring as it does in one person when many more individuals equally exposed show no toxic effects. Evidences of cachexia with failing strength are indications for rejection, since treatment in such individuals can do but one thing—namely, to hasten the inevitable.

DOSAGE

When to repeat the treatment must depend entirely on the condition of the patient. This is an individual problem and shows considerable variation, for one patient may be well in a week, while another may still show effects of the lead for six or seven weeks. The appetite should be normal and any residual weakness should have disappeared. If, at the end of four or ten days when there is no further evidence of lead intoxication, provided the urine is normal and the blood shows only a slight reduction in hemoglobin, and less than one stippled cell to three or four fields, it is safe to repeat the dose.

The dose is important. We have used the massive as well as the divided dose. The former resulted in a rapid dissolution in two instances, while the latter had little effect on the disease. If the treatment is entirely quantitative, as Bell suggests, it is reasonable to assume, other things being equal, that there should be little difference. With the new preparation, we give 80 to 100 mgm. at weekly intervals until three doses are given and then wait for two or three weeks. During this interval the patient may receive radiation. After the lead has been introduced the patient is kept quiet in bed, heat is applied to the epigastrium and nothing but fluids are allowed by mouth. The

patient is instructed to take at least 1500 cc. of water and is given 250 cc. of fruit juice, sweetened with glucose, every four hours. Morphin is given for pain. If, at the end of twenty-four hours, there is no evidence of toxemia, patients are put back on a light diet, with instructions to keep up the elimination. To overcome the reaction and to immobilize the lead, we have given calcium lactate and milk. If the heart shows evidences of failing, cardiac stimulants are resorted to; while for the anemic, a transfusion offers the most, if it is severe.

The effects on the growth are difficult to describe. In the breast, where the lesion is obvious, the tumor, if it is attacked, becomes nodular, somewhat softer and more movable. Nodules, which are confluent, may become discrete. They lose their reddish color and assume a yellowish brown appearance, and in a short time become umbilicated as does the pustule in smallpox. Large weeping areas discharge profusely for a day or so and then crust over, so that new skin may cover the entire area. Metastatic glands which are confluent may become individualized and freely movable as long as the patient's condition is favorable, though at the appearance of cachexia they may reassume their growth. Likewise, edema of the arm, incident to pressure on the axillary vein and obstruction of the lymphatic return, may almost disappear. Then again, we have seen patients who apparently were improving and in whom the localized area that we were observing showed evidence of regression, suddenly become cachectic; tumor growth crops out in a new place; this is especially rapid and always fatal.

CONTRAINDICATIONS TO TREATMENT

At first sight when the question of chemotherapy comes up in malignancy, hopes are raised for the successful combat of systemic cancer. These hopes are, however, short lived, for the amount of lead necessary to overcome a large and well-spread growth is prohibitive to the organism as a whole. Likewise, individuals showing evidences of metastatic involvement in brain or lung, are not favorable subjects, for the resultant edema that accompanies treatment in either set of persons will result in an acute cerebral edema in one instance and an acute pulmonary edema in the other, both of which may result fatally. In view of his experience in such cases, Bell does not advise treatment in patients where the extent of the growth is more than one-twentieth of the body weight or in persons with pulmonary or brain metastasis. In extensive widespread disease, autopsy has shown that treatment will completely destroy malignant tissue, but the patient succumbs to the general exhaustion that accompanies this type of therapy. Furthermore, patients with serious cardio-renal or pulmonary lesions are poor risks from a general standpoint, as they withstand metallic intoxication of any kind badly.

RADIATION AND LEAD

As the first patients whom we treated had all had heavy radiation, it was impossible to determine the effect of radiation on tissue containing lead. However, we did succeed in combining radiation and lead in a few of the later cases. Three of these showed marked changes for the better, but one of

them, a periosteal sarcoma which was temporarily arrested, finally developed lung metastases with the usual rapid progress of the disease.

RESULTS IN EIGHTEEN CASES

Up to the present time we have treated eighteen cases. These have been of varying types of malignancy, and though we have had evidences of temporary improvement, only one case can be looked upon as an arrested case. In looking over our records, the one impressive feature of the work carried on is the fact that in order to get results with the use of lead itself, it must be pushed to the limit; those individuals having a marked general reaction and some local reaction show improvement. Where the dosage is divided so as to prevent acute constitutional effects, the lead is accumulative and does not seem to produce any clinical change in the malignant tissues. When the more stable and less toxic colloidal lead phosphate is used, the effect on the growth is very slow. With no evidence of any immediate damaging effect on the blood or kidney, the tendency is to push the treatment too rapidly, so that sooner or later intoxication and cachexia result. Whether the treatment exerts its effect by means of a thrombosis of the capillaries in the tumor, as Wood suggests, is a question. We are rather of the opinion that lead poisons the entire organism. All tissues, normal as well as malignant, suffer, but because of the inherent instability of the malignant cell, it suffers more than the normal. Healthy tissues recuperate if the patient is not cachectic, but if the patient's vitality is already greatly undermined, the treatment may hasten the final outcome rather than delay it.

Though our efforts have not been very successful, we feel that the failures have been due to the advanced stage of the disease in our patients. All of them have been hopeless from a surgical or radiotherapeutic standpoint as far as curability was concerned. In other words, it is doubtful if any form of therapy would have been of benefit. The treatment has considerable merit, but it will require more observation and experience to gauge correctly the dosage that will give the maximum benefit.

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DISCUSSION

FRANKLIN R. NUZUM, M.D. (Santa Barbara)—I have observed about thirty-five patients with a carcinomatosis who were treated with colloidal lead or colloidal lead phosphate. Of these, eight came to autopsy. I have studied the effect of the lead upon the malignant tissues and upon the structures of the body not involved by the malignancy.

To one patient with a large carcinoma of the liver, a single injection (about 80 mg. of colloidal lead) had been given. Death occurred twenty-four hours later. There were no gross or microscopic changes in the tumor tissue in this instance. In the seven other instances, larger amounts of lead had been given. Some had received a total of as high as 500-600 mg.

Grossly, a primary swelling of the tumor tissues followed the initial injections. This was followed by a regression which in two instances went on to the point where the tumor could no longer be felt upon palpation.

The first microscopic change observed was an area of hemorrhage in the center of the tumor growth. This was followed by softening of the central portion and finally by liquefaction. This process of liquefaction had extended almost to the edge of a primary carcinoma of

the liver, so that the tumor at autopsy represented a cyst 22 cm. in diameter, filled with a straw-colored fluid. The limiting membrane of the cyst was a fibrous tissue 1 cm. in thickness. On microscopic examination this membrane was found to consist of connective tissue cells, scattered through which were varying numbers of carcinoma cells.

The nuclear structure of the carcinoma cells became very dark in color following injections of lead, and also presented irregular outlines. The cytoplasm then became granular, and later disappeared entirely. These damaged cells finally became entirely liquefied. There occurred an increase in the number of connective tissue cells about the periphery of the tumor in many instances. Fibrosis is a process by which nature attempts to combat the malignant invasion and an attempt which is almost successful, as is illustrated by a certain type of tumor recognized pathologically as "leather bottle" carcinoma of the stomach.

As a complication of carcinoma of the lung treated with lead, the rapid breaking down of the tumor nodules resulted in a secondary broncho-pneumonia about the periphery of the tumors, and the pneumonia was responsible for death in two instances. On the other hand, in a third instance, very numerous metastases in both lungs became broken down, then fibrotic. This fibrosis now gives x-ray evidence of clearing, so that this patient is apparently reaching a clinical arrest.

The lead also had a destructive action upon some of the organs of the body not involved by the malignant process. I have studied the liver, kidneys and spleen particularly. A marked fatty degeneration of the liver cells starting at the periphery of the liver lobule and extending inward toward the central vein was noted in several instances. This progressed to such an extent that in one instance two-thirds of the entire liver was so damaged.

The lead likewise had a destructive effect upon the kidneys. The cells lining the first and second portions of the convoluted tubules presented a marked cloudy swelling and advanced farther to a fatty degeneration in some instances. The glomeruli were little if at all involved. Such kidneys presented an acute nephritis such as has been produced experimentally in laboratory animals with uranium.

The spleen in one instance had a dull gray slate color. The reticulo-endothelial cells lining the blood channels were here involved.

By quantitative methods we have recovered more lead from the liver and kidneys, than from a similar amount of malignant tissue. This indicates the care with which these patients must be treated, but it also makes evident the greater sensitiveness of the malignant tissues to the lead intoxication.

This pathological study makes apparent the destructive action of colloidal lead, and in our experience, the less toxic and equally efficient colloidal lead phosphate, upon carcinoma cells. This microscopic evidence, coupled with apparent clinical arrests in two instances, makes one hopeful that a real advance is imminent in the treatment of malignancy. Blair Bell's report of 23 per cent of clinical arrests in 250 patients suffering with inoperable malignancy, treated with colloidal lead injections, has caused this line of combat to be taken up by many clinicians and investigators, and has lent much encouragement to what has heretofore been a discouraging problem.

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HENRY J. ULLMANN, M.D. (Santa Barbara)—Our observations at Santa Barbara on the use of the metallic colloid led us to believe that its use is open to question, because of its marked toxicity on the organism as a whole; but because of the marked effect on some of the tumors followed moderate dosage, we are encouraged to go on with the work. All the evidence at hand, both from our own experimental work and the work of others presented in the literature, points to the conclusion that lead can only be transported in the blood stream as a highly dispersed or colloidal phosphate. This phosphate may exist in two forms, depending on the reaction of the supporting medium. In the presence of the normal alkalinity of the body, it exists as the tri-lead, orthophosphate, but in the presence of only moderate acidity or equilibrium conditions, it goes over into the one hun-

dred times as soluble di-lead salt, also the solubility of the di-lead salt is very marked in even small quantities of lactic acid. Because of these facts, we can see no reason why any other form of lead than the orthophosphate should be used and our results have borne out our hopes. It is infinitely less toxic and in every way as efficacious in its effects on malignant tissue. We have been able to give it to patients with a kidney function of zero, without apparent injury. Another advantage is that it is stable and keeps more or less indefinitely at room temperature.

Our experience at Santa Barbara throughout the past year leads us to draw certain conclusions. These are that the material shows sufficient promise when used in conjunction with radiation to warrant intensive investigation to either develop its method of use or to prove it useless at the earliest possible moment. Also that it should not be used outside of a hospital equipped with every facility for thorough clinical investigation and that patients subjected to this treatment should be hospitalized and told that the treatment is equivalent to a sanitarium treatment for tuberculosis—that is, that they must remain for some time under observation. We also feel strongly that this treatment should be confined to those physicians who are both experienced clinicians and radiologists or an experienced clinician and a radiologist working in close co-operation. If this be not done, very unfortunate accidents may occur.

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F. F. GUNDRUM, M.D. (Capital National Bank Building, Sacramento)—It is a matter of gratification that what may be called the experimental phase of the treatment of cancer with lead has fallen into the hands of such careful scientific observers as Doctor Soiland and other colleagues. I believe the rest of us must wait with patience the final judgment of its efficacy arrived at through unbiased observation of results over a considerable period of time.

It is interesting, too, that Weller, of Ann Arbor, has recently brought to our attention the "Traite du Plomb" of Thomas Goulard, "Royal Professor-Demonstrator in Surgery, Royal Demonstrator of Anatomy of the College of Medicine, Member of the Royal Academy of Science of Montpellier, etc., etc., published in 1760. M. Goulard had, for a considerable time, been interested in therapeutic use of lead in a variety of conditions, his first experience having been with urethritis. In the fourth chapter of this treatise of 1760, we find a discussion of the use of lead in the treatment of neoplasm. Here the author reviews the opinion of his predecessors from Hippocrates, that external applications are useless in the treatment of cancerous tumors. "This opinion," he states, "is the cause of these unhappy sufferers being left a sacrifice to the most horrible pains, which no medicine can calm, and which frequently conduct them to their graves. From hence one may judge of what importance it would be to discover a medicine, capable not only of relieving, but even of curing this otherwise invincible and cruel disorder. Now I have the comfort to think that I have discovered such a medicine in the extract of Saturn." He fortifies his claim to success in the treatment of cancer by nine observations which are concerned with twelve patients. Goulard was considered somewhat of a charlatan by his contemporaries, and when the University of Montpellier celebrated its centennial in 1921, Thomas Goulard was not mentioned among those who had added luster to the seven centuries of surgical practice and teaching at that famous school. This feeling probably arose through his great care to keep the nature of his "Extract of Saturn" a secret. Nevertheless Goulard enjoyed great vogue in his day, as is evidenced by his numerous titles and by the fact that his "Traite" was translated into German and French.

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ORVILLE N. MELAND M.D. (closing)—The results, as you see, are not encouraging, but it must be remembered that only terminal cases have been treated. We feel, however, that the work should go on, since we have seen just enough improvement to make it worth while. When one reads of Blair Bell's results and finds that he has thirty patients who by all rules should be dead, and who are now clinically well after the use of lead, it seems

that we are on the right track. Undoubtedly Bell met many discouragements before he was able to get the results reported. Therefore, we are of the opinion that when we are more familiar with the treatment, the percentage of improvements will also increase.

UNUSUAL URINARY CALCULI*

WITH CASE REPORTS

By WILLIAM E. STEVENS, M. D.
San Francisco

DISCUSSION by H. A. Rosenkranz, M. D., Los Angeles; Miley B. Wesson, M. D., San Francisco; Wirt B. Dakin, M. D., Los Angeles.

SINCE the dawn of medical history the subject of urinary calculi has been one of great interest, but it is only within the last quarter of a century that the advent of the perfected cystoscope, the roentgen ray, pyeloureterography, stereoscopy, the opaque, wax-tip and wax-bulb catheters and functional kidney tests have elevated the diagnosis of this condition from the realm of guesswork to that of an almost exact science. Urinary stones if present, although occasionally overlooked, in almost every instance through careful investigation will be revealed. If sole reliance is placed upon the x-ray, some stones, especially those composed of pure uric acid, cystin, and xanthine, will often escape detection. There is still no unanimity of opinion regarding the origin of urinary concretions, although most investigators agree that infection and obstruction are important etiologic factors.

Having been fortunate enough to encounter some unusually interesting cases of calculi in various portions of the urinary tract, I am tempted to think them worthy of presentation.

CASE REPORT OF NEPHROLITHIASIS

The most interesting case of nephrolithiasis that has come under my observation was that of a stout man, 57 years of age, whose principal complaint was pain in the left lumbar region. Periodically, for many years he had noticed blood in the urine. At the age of fifteen he had contracted lues and had received treatment over a period of three years. Since that time, numerous blood and spinal fluid examinations had been negative and no symptoms suggestive of syphilis had occurred.

His urine contained many pus and red blood cells. Cystoscopy showed an injected bladder mucosa. The urine from the right kidney contained many leukocytes and an occasional red blood cell; that from the left a very occasional red blood cell. The right kidney urine contained numerous staphylococci; the left was culturally negative. Radiography revealed an enormous coraliform calculus forming a complete cast of the right kidney pelvis involving the major and minor calices, and closely resembled the pyelogram of an injected kidney. The left kidney was large and its pelvis within normal limits, considering the size of the organ. The films also showed Paget's disease of the sacrum. Twenty cc. of urine from the right kidney contained 7½ per cent of phenolsulphonephthalein; that from the left contained 30 per cent of phenolsulphonephthalein in 50 cc. of urine. The right kidney urine contained 0.002 urea, and the left 0.002 minus. The total phenolsulphonephthalein output was 50 per cent in two hours and ten minutes.

One hundred cc. of blood contained 40.5 mg. of urea.

As the patient also suffered from arteriosclerosis, angina and diabetes, and the pain was on the left

side, operation on the right kidney was not considered justifiable. The pain in the back disappeared in a few months, but he began to experience pain in the left upper quadrant a short time later. Films of the un-injected kidneys and pyeloureterograms at this time showed no change from the previous pictures except a small elongated density possibly due to a stone in the lower portion of the left kidney. It was not likely that the pain in the left upper quadrant was due to that condition. No stricture was found on calibration of either ureter. The phenolsulphonephthalein, indigo carmin and comparative quantitative urea estimation tests now showed better function in the right kidney.

Sixteen months later he again consulted me complaining that he had not been able to attend to his business for over a year because of frequent attacks of pain in the left upper quadrant. He had also noticed more blood and clots in the urine. Some bleeding followed the introduction of the cystoscope. There was an intra-urethral enlargement of the lateral lobes of the prostate gland. Somewhat bloody urine was obtained from the catheter in the left ureter. Functional tests again showed better function in the right kidney. The x-ray showed faintly the same small shadow in the left kidney region. This had not increased in size. The pyelogram now showed slight enlargement of the left kidney pelvis and distinct blunting of the calices. No obstruction was found on calibration of the ureters. The total phthalein output was 30 per cent for two hours, the blood urea 52.5 mgs. per 100 cc., the blood sugar 157.2 mgs. per 100 cc.

Gastro-intestinal plates were negative. The cardiologist reported a marked aortitis, principally of the ascending aorta, and arteriosclerosis affecting most of the vessels of the body. The pain improved under intravenous injections of sodium iodide and diet, but recently reappeared and became more severe. The patient refused further examination or treatment.

This patient died a few days ago of cerebral hemorrhage. At autopsy, instead of one large stone five articulated calculi were found in the pelvis of the right kidney. The inferior calyx of the left kidney contained a calculus the size of a pea.

The jejunum was markedly distended and hemorrhagic and the pain in the left upper quadrant was probably due to this condition.

The impossibility of always determining the exact number of renal calculi by radiography is demonstrated in this case.

RENAL CALCULI REPORTED IN THE LITERATURE

The largest renal calculus which I have found recorded in the literature was reported by Pohl. It weighed 2 kilograms. The largest kidney stone which has been removed surgically, however, was reported by E. Tricomi. It weighed 804 grams.

Comment—The unusual features about my case were: the size of the stones in the right kidney; the absence of pain or symptoms of obstruction in the right kidney; the fact that functionally the right kidney was the better of the two organs. The question as to the cause of the pain in the left upper quadrant was also of interest. The possibility of a renorenal reflex was considered previous to autopsy (Plate 1).

CASE REPORT OF BILATERAL GIANT URETERAL CALCULI

An emaciated, sallow man, 33 years of age, complained of attacks of sharp, shooting pain in the left lumbar region, and frequent urination. The pain was occasionally dragging and throbbing in character. It had occurred more frequently during the past year and had been continuous for the past month. His appetite was poor and he was rapidly losing weight and strength. He was told that an x-ray taken three weeks before coming under my observation had revealed a stone in the left ureter. He had also had pain

* Read before the California Medical Association at the Fifty-Sixth Annual Session, April 25-28, 1927.

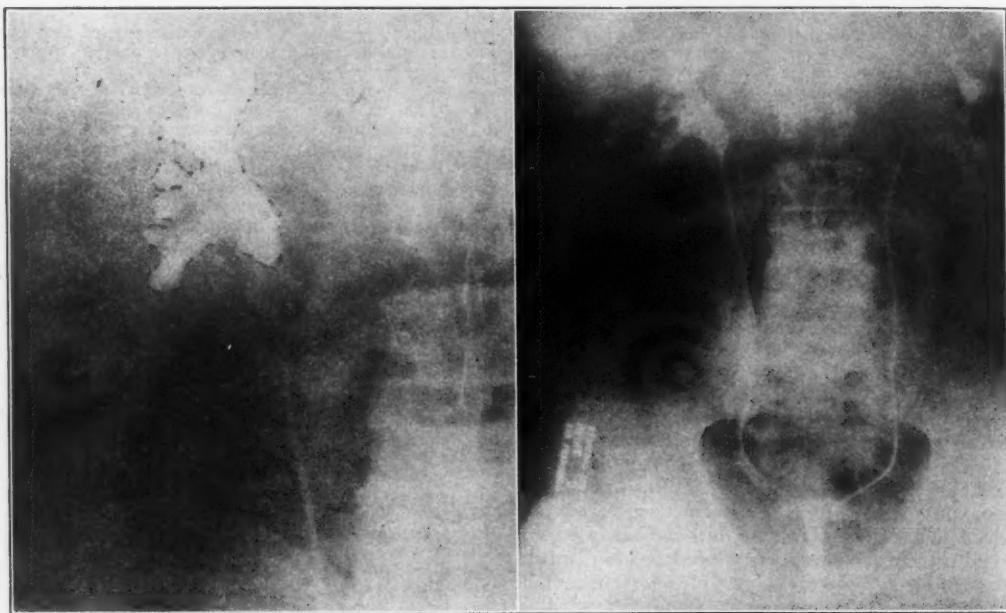


Plate 1—Cast of a right kidney pelvis formed by calculi.

Plate 2—Pyelogram, same case. Both kidney pelves injected with 12½ per cent sodium iodide solution.

in the right lumbar region, of one week's duration, a year previously. Otherwise his past history, as well as his family history was not significant.

A catheterized specimen of bladder urine contained numerous pus cells, a moderate number of blood cells and a heavy cloud of albumin. Rectal palpation revealed a large indurated object which was apparently in the terminal portion of the left ureter, and another body of similar consistency probably located in the right ureter. Cystoscopy revealed a somewhat injected bladder mucosa. It was impossible to insert a catheter beyond the left ureteral orifice or more than 3 cm. into the right ureter. No indigo carmine appeared on either side within fifteen minutes after intravenous injection. The x-ray revealed large areas of calcification on both sides of the pelvis, probably due to stones in the lower third of the ureters. The shadow on the left was larger than that on the right side.

Diagnosis: Bilateral, giant ureteral calculi.

Following extraperitoneal exposure of the left ureter an incision was made just above the upper end of the calculus. Owing to the enormous size of the latter and its close adherence to the ureteral wall, forceps were applied with great difficulty. Even then it was impossible to dislodge the stone, and it was only after crushing with heavy bone forceps that the fragments were removed. The latter weighed 44 grams. About 6 grams were lost. Improvement began almost immediately after operation, and the patient left the hospital fourteen days later with but very slight drainage from the lower angle of the wound.

Thirty-three days later he again entered the hospital. The right ureter was exposed in the same manner as the left, and one large and two small stones removed. The largest stone was extracted with some difficulty because of its size and intimate adherence to the wall of the ureter. It weighed 18 grams. The patient left the hospital fifteen days later with the wound almost closed. It was now possible to catheterize the ureters to the pelves. Both kidney urines contained numerous pus cells. The patient's strength and weight increased rapidly and he now voids at normal intervals and has returned to work. The urine from both kidneys still

contains numerous pus cells, due to chronic pyelonephritis.

URETERAL CALCULI REPORTED IN THE LITERATURE

Abell reported a case of bilateral ureteral lithiasis, the stone in the right ureter being 7.5 cm. in length and 7 cm. in circumference and weighing 24 grams. A small stone in the left ureter weighed 2 grams. Collison reported a case in which two calculi formed a cast of almost the entire left ureter. The upper calculus weighed 840 and the lower 440 grains. Bovee (quoted by Abell) removed a ureteral calculus 2.75 by 1.75 by 1.15 inches in size. It weighed over 87 grams. Specklin (quoted by the same author) removed a stone from the left ureter weighing 51 grams. Specklin found reports of an enormous calculus removed by Federoff which weighed 52 grams. Rovsing reported a calculus 18 cm. in length and the width of a bean; the weight was not stated. Israel reported a stone weighing 54.4 grams and another 17 cm. long and 9 cm. in circumference; the weight was not given. Lloyd reported a calculus 5½ inches in length and 2½ inches in circumference. Norris (also quoted by Abell) recorded a case in which the calculus was nearly 6 inches long. Buerger reported a case of ureteral calculus 10 cm. in length, another 2½ inches long by 1½ inches in width at its widest part. Maynard Heath (quoted by R. E. Cumming) reported a ureteral stone 6 inches long by 1 inch in diameter which produced no subjective symptoms.

It is a curious fact that the majority of giant ureteral calculi have been found in the left ureter.

Comment—Large unilateral stones have been reported, but although about 10 per cent of ureteral stones are bilateral, my case is the only one

that I have been able to find in the literature in which giant calculi occurred simultaneously in both ureters (Plate 2).

TWO CASE REPORTS OF PROSTATIC CALCULI

CASE I—A laborer, 32 years of age, entered the hospital suffering from frequent and painful urination. He also complained of soreness in the perineum (worse at night), pain in both lumbar regions, worse on the left side), and diarrhea. A sister had tuberculosis. He had contracted gonorrhea at twelve, and again five years previously. His symptoms began one and a half years before coming under my observation. He stated that he had passed some gravel seven months ago. For the previous six days it had been impossible for him to work on account of weakness and diarrhea.

On attempting to introduce a soft rubber catheter an obstruction was encountered in the prostatic urethra and agonizing pain of several minutes' duration resulted. On the following day an unsuccessful effort was made to introduce the cystoscope, first under local, then under general anesthesia. A metallic click was elicited by contact of the instrument with a hard foreign body, which completely obstructed the canal. Seven hours later, no urine having been voided and the abdomen being distended and painful, the urethra was opened through the perineum and an enormous calculus grasped with forceps. During the attempt at removal the stone was crushed. Even then it was impossible to remove some of the larger fragments which were wedged in the urethra just anterior to the neck of the bladder, and as no urine escaped, it was considered advisable to open the bladder suprapubically. All fragments of the calculus were then extracted and a retention catheter readily inserted through the external meatus into the bladder. The patient was out of bed seventeen days after operation; he passed urine through the urethra without discomfort, and the wounds healing rapidly.

Comment—This case is of interest because of the enormous size of the prostatic calculus. It weighed over 50 grams. Formed primarily in the upper urinary tract it probably lodged in a pouch or diverticulum of the prostatic urethra, there increasing in size. This case is one of false prostatic calculi. True prostatic calculi, on the other hand, are formed in the gland proper, are much smaller and are usually multiple. The following is an example of this type.

CASE II—A man, 38 years of age, complained of a slight urethral discharge and an uncomfortable sensation in the perineum. On rectal examination several small hard bodies about the size of large grains of wheat could be palpated in the prostate gland. On pressure a sensation of crepitation was elicited. The prostatic fluid contained a large number of pus cells. As the amount of discomfort was not great and the patient was otherwise in good health, I did not insist upon operation.

PROSTATIC CALCULI REPORTED IN THE LITERATURE

DeWitt Stetten reported the removal of a calculus weighing $1\frac{3}{4}$ ounces. Genouville reported a prostatic calculus weighing 200 grams. Nicholich removed a prostatic calculus weighing 320 grams. Judd and Crenshaw reported a stone in the prostatic urethra one-half inches in diameter and another large stone in which the urethra was dilated to the size of the bladder. Ashhurst found two stones in the prostatic urethra, one 8 by 4.5 by 4 cm. and behind that another 4.5 by 4 by 3 cm. in size; an incorrect diagnosis of carcinomatous

prostate had been made in this case. Sabitier referred to a case of calculus in the prostatic urethra weighing 3 ounces and Dumerill saw one nearly three times as heavy. MacKenzie and Seng reported an unusual case of a true prostatic calculus which weighed 26 grams, and Pugh also reported an interesting case of true prostatic calculi in which fifty small stones were removed from the lobes of the prostate.

CASE REPORT OF URETHRAL CALCULI

The patient, a native of the West Indies, aged 41 years, a steamship steward by occupation, came to me complaining of difficult and painful urination, dribbling, and a thick white discharge from the urethra. He also suffered from pain in the lumbar region and was obliged to walk with a cane. He had gonorrhea in 1889, 1900, 1908, and in 1911. He admitted having had a sore on the penis in 1889 and again in 1908. Mercury and potassium iodid were taken for one month after the appearance of each sore.

The present illness began with the foregoing symptoms nine months before coming under my observation. He had not had intercourse for one month previous to the time they appeared. One month later tremor of the lower extremities appeared and he began to experience difficulty in walking. The following month a physician passed a number of sounds, but without improving his condition.

In February, 1912, while at sea and unable to secure medical attention, he was obliged to pass a piece of telephone wire into the urethra before urination was possible. Frequently, after the use of this wire, several small calculi would be passed. A few months later radiographic examination revealed a number of characteristic calculus shadows along the urethral canal. None were seen in the bladder or upper urinary tract.

The treatment at that time consisted of perineal section, by means of which removal of the calculi was effected. For a short period subsequent to this operation free micturition was possible, but gradually the act of urination again became difficult and the dysuria, urethral discharge and pain in the lumbar region increased in intensity. A 19 F sound passing with difficulty through a strictured urethra elicited a metallic click at several points along the canal. The discharge from the meatus contained a large amount of pus, but no gonococci. Radiography at this time showed numerous calculi in all portions of the urethra, but none in the bladder or kidneys. A positive Babinski, greatly exaggerated patellar reflexes and marked clonus of the flexor muscles of the leg were present. The Wassermann was positive and the difficulty in walking, as well as the pain in the back and legs, was without doubt due to the specific myelitis.

Owing to the fact that operative removal of the calculi had been succeeded by a brief remission of symptoms only, the following slower method of treatment seemed to offer the prospect of better and more permanent results. Most of the larger stones were grasped with forceps and removed through the urethroscope, while the smaller concretions were crushed or were passed following dilatation of the urethra with sounds. Treatment was very painful in the beginning, but the urethra rapidly became tolerant, until finally the introduction of large instruments became feasible. After their use smaller calculi frequently escaped with the irrigation fluid.

One stone located in the navicular fossa could be palpated from without, but was not seen through the urethroscope or detected with the sound. This finally came away after the passage of the cystoscope, introduced for the purpose of catheterizing the ureters in order to obtain urine for examination, reassurance of the absence of foreign bodies, and to make comparative tests of the renal function.

One month after the conclusion of treatment the patient voided clear urine freely and without discom-

fort and no calculi could be detected on palpation, urethoscopic or radiographic examination. Cystoscopically the bladder was normal, with the exception of a slight cystitis. Notwithstanding intensive anti-luetic treatment the symptoms due to the myelitis remained unimproved. The patient passed from my observation and, I am informed, died a few months later from some intercurrent disease. The post-mortem revealed a definite myelitis. No concrements were found in the upper or lower urinary tract.

No calculi could be detected in the upper urinary tract at any time and the patient had never suffered from renal colic.

URETHRAL CALCULI REPORTED IN THE LITERATURE

Rathbun reported an unusual case of a urethral calculus 10 cm. in length and 3 cm. in diameter which had formed around a piece of wire. Kurbaton published a case in 1885 in which a urethral calculus weighed 390 grams. Angelo Menish reported the removal of a stone the size of a hen's egg which weighed 94 grams. Boger recently reported an interesting case in which, following urethrotomy, twenty-two stones were removed from the urethra.

Comment—My case is unusual because of the large number of urethral stones, their wide distribution and the fact that they probably formed in the urethra.

CASE REPORT OF CALCULI IN THE FEMALE URETHRA

Stones are rarely found in the female urethra because of the shortness of the canal, its lesser curvature and its greater distensibility. Although occasionally originating in the urethra, the majority have descended from the upper urinary tract and become lodged in a diverticulum or behind a stricture either at the external meatus or in the lumen of the canal.

A woman 50 years of age entered the Stanford Women's Clinic complaining of occasional attacks of painful urination. On vaginal palpation a hard mass was detected in the urethra just anterior to the bladder sphincter. The urethroscope revealed a large calculus about 3 cm. from the external meatus. On attempting to remove the stone with urethral forceps it was broken into a number of fragments. Some bleeding followed this procedure. One week later the patient was free from symptoms and urethroscopy was negative. No calculi were found on radiography of the upper urinary tract.

CALCULI IN THE FEMALE URETHRA REPORTED IN THE LITERATURE

Caballero in 1915 removed a stone from the female urethra weighing 40 grams. He stated that only eighteen other cases of urethral calculi in this sex had been reported to that time. Basemore found a urethral calculus in a girl 7 years of age. Yelloly in 1815 stated that Heading of London removed a calculus weighing almost 3½ ounces. The largest calculus that has been removed from the female urethra was reported by Dunglas in 1859. It weighed 7 ounces and was 8 inches in



Plate 3—Bilateral giant ureteral calculi.

circumference. The patient died twelve days after operation.

COMMENT

I will make no further mention of the diagnosis or treatment of urinary calculi except to emphasize the value of stereoscopic pictures, in the presence of shadows in the kidney or ureteral regions; and to stress the importance of postoperative treatment to clear up infection and overcome obstructions due to strictures, kinks of the ureter or other predisposing factors. In the absence of subjective symptoms and with negative urinary findings I do not believe that operation is indicated for stones which are not increasing in size. These patients should be examined frequently, and ordinary pictures as well as pyelograms should be taken from time to time.

Flood Building.

DISCUSSION

H. A. ROSENKRANZ, M. D. (1024 W. P. Story Building, Los Angeles)—Doctor Stevens' unique case reports and valuable review are a distinct addition to our knowledge of urinary calculi. The author's judgment in not operating upon the elderly man with bilateral nephrolithiasis is to be commended. That the patient died without operation again emphasizes the fact that calculus cases are usually a sign of either infection in the urinary tract or elsewhere or both, and such focal infections having a direct and marked effect upon every cell of the human organism, and especially upon the cardiovascular system, these cases must be judged with great care from the standpoint of operative risk.

They are the patients who surprise us with postoperative myocarditis.

As Doctor Stevens has pointed out, pain is a capricious symptom. Some five years ago I removed a walnut-sized stone from a kidney pelvis and the only pain that the patient had experienced was localized halfway down the ureter and was not referred anywhere.

It used to be said of Israel years ago that he was the only man who had palpated a renal calculus. At the Los Angeles General Hospital several years ago there was a woman on my service whose kidney consisted of a thin sac filled with stones about one-half inch in diameter. Previous to operation distinct clicks could be distinctly felt and heard on palpation as these calculi grated past one another. This patient had one of the worst sets of teeth that I have seen. I believe, after ruling out obstruction to urinary outflow, that infected teeth are the most important factor in the etiology of renal calculi.

As regards diagnosis: The symptoms of renal calculus and other renal conditions are sometimes simulated by pneumonia of a lower lobe. Four of such patients have passed through my practice during the past seven years. The first three were diagnosed without operation, but the last one occurring about a month ago and diagnosed by one internist as a typhoid spine (patient presented a typical typhoid facies) and by others as perinephritic abscess; with urgent recommendations written all over the chart by consultants to operate for perinephritic abscess. The case proved to be one of lower lobe pneumonia with pleurisy. The urine was negative.

A diaphragmatic pleurisy must also be borne in mind.

Physicians should not be misled by stomachic colics which sometimes overshadow the renal symptoms. These patients sometimes assist the unwary into making a wrong diagnosis by insisting that they ate food that disagreed and that their condition is primarily a gastro-intestinal affair.

As regards return of function after calculus removal it is of noteworthy interest that kidneys with a very low phenolphthalein output may regain complete function after removal of an obstructive calculus. Nephrectomy should be avoided in most cases.

Doctor Stevens' statement that true prostatic calculi are formed in the gland proper and are usually small and multiple, is borne out by the following patient upon whom I operated at the Los Angeles General Hospital about twelve years ago: An elderly man with an enlarged very crepitant prostate per rectum with symptoms of prostatism was found on perineal section to have a prostate consisting of a large sac stuffed completely with small pebbles from the size of a linseed to a pea. I washed these out through the perineal incision and found that the prostatic cavity encircled the urethra posteriorly. I cleaned the cavity without damaging the urethra. The patient recovered promptly with no other sequelae than a tight prostatic urethra which it was necessary to dilate occasionally. I believe he was some 70 years old and he resumed his occupation of type actor in the movies. X-ray had disclosed the prostate as a large regular mass.

During my student days I assisted Dr. A. J. Scott, Jr., at the North Broadway Clinic in removing with an ordinary thumb forceps a lima bean-sized calculus from the anterior urethra of a male baby that had been suffering from a complete and enormous urinary retention.

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MILEY B. WESSON, M. D. (1275 Flood Building, San Francisco)—A paper on urinary calculi generally furnishes at least one unusual or startling report. Two such cases are found in this article: bilateral giant ureteral calculi and primary urethral calculi.

The cause as well as the stones must be removed, otherwise there will be a recurrence. Some months ago my attention was called to such a case, a giant

left ureteral calculus having been removed eight years before through an extraperitoneal incision. A recent roentgenogram showed two vesical stones (one 9 cm. by 5 cm.), but at operation only the small stone was found in the bladder. A careful search with a probe located the large stone in what was thought to be a diverticulum but which proved to be the ureter. The orifice was cut and dilated and the soft stone crushed and removed in fragments. The primary ailment was a prostatitis and seminal vesiculitis and, as would be expected, in due time a median bar developed, a residual of urine then appeared and shortly thereafter became infected. This was responsible for the first giant ureteral calculus and its reformation eight years later, to say nothing of the persistence of the suprapubic fistula.

Calculi are rarely primary in the urethra, but the inflammatory areas between tight strictures, as described by Doctor Stevens, is an ideal place of origin.

Stones in the prostatic urethra generally arise in the bladder and on their way out are caught in pockets. The patient's usual complaint is an acute retention, the ball-valve action of the stone not being perfect. The diagnosis is made by the click of a silver instrument as it meets with the obstruction. This condition is not unusual in cases that have a contracture at the vesical orifice, following suprapubic prostatectomy. The treatment is very important. The temptation is to grasp the offending stone with alligator forceps (passed through an endoscope) and pull it out. One of my colleagues removed a pea-sized stone this way sixteen years ago damaging the external sphincter, and the patient is still dribbling. An attempt should be made to crush the stones through an endoscope with a pair of Dittel's (alligator) forceps that have had the blades shortened. If this is not successful then a suprapubic incision should be made and the stones removed through the internal sphincter. A 30 F. sound passed through the urethra is often of assistance in pushing the stones into the vesical orifice.

Prostatic calculi are shot-like and lie in the prostate tissue, and should be removed through a perineal incision. They are not urinary calculi, but are usually composed of cholesterol and arise by deposit from the secretion present in the ducts, just as urinary calculi arise from urine.

A not uncommon finding is a silent stag-horn calculus in one kidney and a very small stone in the other, with marked symptoms and rapid destruction of tissue. Before the days of routine pyelography, or an appreciation of the renorenal reflex, many comparatively good kidneys were sacrificed because of a large stag-horn calculus. Each case is a distinct problem, but conservatism should be the keynote of treatment. A nephrectomy for stone, even when the opposite kidney is perfect, is a serious undertaking, for years later the "good kidney" will probably prove to be a stone producer.

All surgeons are interested in kidney stones: (1) because of the amount of renal destruction that occurs in the presence of a stone; (2) the frequency with which so-called silent stones are not recognized; and (3) the number of conditions that can be erroneously diagnosed as renal stone.

The patient, however, is interested in how to prevent the recurrence of stones, for unfortunately they practically always do recur. There are three factors involved in stone formation: (1) the mechanical, (2) the bacterial, and (3) the physicochemical. Fifteen per cent of cases of hypertrophy of the prostate are associated with stone formation because of the residual urine present. Since the work of Rosenow we have been inclined to blame all kidney stones on infected teeth. Recently the chemists have decided that a disturbance of the balance between urinary colloids and crystalloids is an important factor. An alteration of normal protective colloid of the urine may result in the precipitation and deposit of urinary crystals which had been previously held in a supersaturated solution.

For unknown reasons some people are "stone formers," and then without any discoverable reason cease

to be such. Since relapses are prone to occur, conservation of kidney tissue, as emphasized by Doctor Stevens, should be the surgeon's first consideration.

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WIRT B. DAKIN, M. D. (607 Chapman Building, Los Angeles)—Doctor Stevens' paper is very interesting and serves well to remind physicians to be on their guard for symptomless urinary calculi. The Japanese state that one picture is equal to a thousand words, and so it is with Doctor Stevens' radiographs.

An interesting calculus patient came under my observation on January 1, 1926. His family physician had been giving him prostatic massage for enlarged prostate for several months. He offered the usual symptoms of frequency, dribbling, dysuria, prostatic pain. If the attending physician had used a metal catheter he would have made a diagnosis at his first visit, for he would have elicited the characteristic metallic click.

The bladder contained a vesical calculus so large that there was not sufficient space for urine and he had urinary dribbling. If the metal catheter is carefully used, no damage will be done and many startling diagnoses will be made at the first visit. This will, of course, hasten a decision for x-ray pictures.

X-ray plates not only showed this enormous vesical calculus, but also a shadow in the right kidney outlining the kidney pelvis so well, that the x-ray department inquired if we had injected the kidney pelvis before sending the case to the x-ray department. This enormous stone in the right kidney was entirely without symptoms, and we did not molest it. Kidney function was excellent after we had finished his two-stage prostatectomy and, of course, removal of the vesical calculus.

Doctor Stevens' case of prostatic calculi being diagnosed as carcinoma of the prostate is very interesting and I am sure was a happy termination for the patient. The routine attempt to follow these cases in an earnest endeavor to clear up their infections and cure strictures is as important as any of the previous operative procedures.

OBSTETRICS IN THE HOME*

By HARRY S. FIST, M. D.
Los Angeles

DISCUSSION by John C. Irwin, M. D., Los Angeles; J. W. Farrell, M. D., Los Angeles; E. T. Rulison, M. D., Sacramento.

WITHOUT decrying efficient hospital service for abnormal childbirths, a plea is here entered for more efficient care of normal births in the home.

The entire warp and woof of our civilization is woven about the home. Home consists of mother, father, and children, together under one roof. So far as possible they should be kept together.

Home is the logical place for the arrival of the new child. Here in her own bed, her family around her, the patient is in familiar surroundings and away from the infectious organisms often numerous around a hospital. When the mother is away from her loved ones, unable to see callers except at fixed hours, her entire routine of life changed, and with little to do but worry about expense and her family at home, there is not necessarily the maximum of progress. Babies rarely do as well in institutions. Mothers' milk is better when the patient is contented.

The hospital, promoted by necessity, is truly a wonderful institution so long as it efficiently serves

the community, for here many lives are saved; but there are often urgent reasons why a woman cannot go to the hospital to have her baby. The delivery room, all ready for use, is a magnet which attracts the doctor. Abnormalities previously overlooked are here less dangerous. Patients must have thorough, detailed care; and especially is this the case if they are not to be delivered in the hospital.

The trend of modern obstetrics has been toward the saving of time and trouble—for the obstetrician. It is high time that the safety and comfort of the patient be given first consideration. In the hospitals interns or nurses keep watch and call the doctor when the baby is almost born. The obstetrician's time may thus be saved. It may also conserve his time to use forceps, or to reach into the uterus, turn the baby and pull it out; but such procedures should not be undertaken except in the interests of mother and infant. Cesarean section should not be done unless definitely indicated.

Admittedly the following demand hospital management: first labor, disproportion between pelvic canal and child, hemorrhage, multiple pregnancy, high blood pressure, urine changes, previous cesarean section, heart or lung trouble, serious constitutional disease, large varieties of vulva, nervous or excitable patient and previous difficult labor.

The percentage of grossly abnormal cases is very low. Asa B. Davis has stated that¹ "Ninety per cent of pregnant women should be under careful observation, but aside from a few simple observations and instructions, should be treated to a very generous share of masterful letting alone."

Prenatal attention must be given each patient. Not all patients can go to the hospital. The presence of small children, or other reasons quite as pressing, may force the birth of the baby in the home. Hospital care entails considerable expense, often out of all proportion to the patient's ability to pay.

Edward A. Schumann writes,² "A complete study of every patient is in some respects ideal and is a great safeguard against the overlooking of an incipient or disguised pathological condition. However, there are many illnesses of so obvious a character, their diagnosis so comparatively simple, and the indications for their treatment so obvious, that the most intensive laboratory studies play no part whatsoever in the management of the case or in the prognosis, although the expense to the patient is immeasurably increased. I know of one institution where complete basal metabolism studies are required of every obstetrical case, whether normal or otherwise." Strict hospital economies are necessary if costs are to be reduced.

If every mother came to the hospital for delivery, the number would far exceed the total bed capacity. Government subsidy of maternity beds, though unsatisfactory in many respects, holds out some hope of partial solution, and the Shepherd-Towner legislation, pernicious in many ways, was evolved in the hope of solving this problem.

Self-preservation demands the reproduction of a fit race. The lowering birth rate of the great middle class causes grave concern. False educa-

* Read before the Obstetrical branch, Los Angeles County Medical Association, December 14, 1926.

tion has had much to do with this, causing women to fear, "The dangers and suffering of childbirth," and to avoid pregnancy by contraceptive methods. The economic problem presented by the birth, and later the food, clothing and education of the child, has been a factor in causing the wrongful use of birth control. Many young couples avoid childbirth early in married life, only to discover, to their sorrow, that they want a baby when it is too late! The fear, usually groundless, that childbirth will be complicated by hemorrhage, infection, toxemia, or laceration, has led many women to avoid conception.

Present-day mothers need not suffer, as did the preceding generation. Modern science has brought means of relief which should be universally used.

The normal patient can very properly be delivered in the home. Most babies are now born in the home, where they are attended by the general practitioner or the midwife. Much might be done to lower our appalling obstetrical mortality if these persons were to receive instructions and have their work supervised. Many mothers and babies suffer or die chiefly from infection, which we know to be largely preventable. Cleanliness will minimize the danger from bacteria. The attendant must realize the responsibility of this kind of work. He must know the actual details of careful technique. With proper training, and a certain amount of interest, every difficulty may be removed, providing the obstetrician is willing to use the necessary effort. If the best care possible be given in the home, the problems of finances, care of the home, danger of infection, are to a large extent solved.

The out-patient departments of teaching institutions show far lower mortality and morbidity rates than the hospitals, where most of the complicated cases are delivered, and lower than occur in private deliveries in the homes. Proper care before, during, and after labor is the answer.

As the result of prenatal care, the condition of the patient is known. A detailed history and a thorough, comprehensive physical examination are essential. Every pelvis must be measured, every heart and chest studied. Urine examinations, blood pressure determinations, estimation of hemoglobin and white blood cells, are made in the office. Vaginal examinations are not made at the time of delivery. Operative procedures are avoided so far as possible. Postpartum care involves painstaking attention to every detail until involution is complete. Systematized care can be given these patients if preparation is made for it.

Much of adaptability and ingenuity are required to convert an ordinary bedroom into a well-appointed delivery room, using only such supplies as may be easily carried. The family must know what to provide, and all should be in readiness. When called, the physician and assistant must respond at once, and bring sterile goods and other supplies. No procedure may be attempted which carries the risk of infection.

The physicians who refuse to deliver obstetrical patients outside of the hospital are within

their rights. Women who must bear their babies at home should have good care, nevertheless.

Leading obstetricians express various opinions as to the feasibility of home obstetrics, as witness:³

A. B. DAVIS: Any case which can be conducted in a hospital can be taken care of in the home.

J. B. DELEE: It is possible to conduct properly labor in the home.

B. C. HIRST: Refuses to take patient unless she is going to the hospital for confinement.

P. B. BLAND: Obstetric morbidity and mortality is less in private homes than in hospitals—because complicated cases are treated in hospitals. Urban obstetrical morbidity and mortality is higher than suburban. Better maternity work may be done in the hospital. Cannot be properly conducted in private home.

J. W. WILLIAMS: Attend no abnormal patients in out-patient service.

COMMENT

Hospital obstetrical practice has improved. Most of the abnormal cases are delivered in the hospital, but the majority of births occur in the home and it is here that improvements in service must be made. Home obstetrical practice can be made safe, but care and preparation are required. We must either place the hospital within reach of all—an herculean task; or give obstetrical patients proper care in the home. A new type of obstetrician must be developed, the specialist in home obstetrics, able to recognize the type of case, and prepared to give the best of care to normal cases in the home, and to abnormal ones in the hospital. The careless "hit or miss," "trust to luck" obstetrician must fade into the past.

2007 Wilshire Boulevard.

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DISCUSSION

JOHN C. IRWIN, M.D. (1006 Union Bank Building, Los Angeles)—In discussing this paper I am compelled to differ from the author in his statement that a large number of confinements should be conducted in the home. I do, however, agree with him in his plea for more efficient care of normal labors at home. It is, of course, impossible for all births to be cared for in hospitals because we have not enough institutions to care for them, but I believe the time will come when we shall have. Until that time arrives our chief aim should be for better care for the mothers who must be delivered at home.

It is true that the majority of babies are born in the home. Must we not then decide that this fact has something to do with the appalling death rate from childbirth in this country? We stand eighth or ninth of all civilized countries in this particular cause of death, a reputation hardly to be wished for.

It is estimated that at least twenty-five thousand women die annually in the United States from childbirth, a larger number of Americans than were killed in any battle of the World War. In 1916 United States Government statistics of about two-thirds of the population gave 11,642 deaths from childbirth, not including cases in which the child was stillborn. Of this number 5201, about half, were due to infection. We know that infection is preventable, and is almost unknown in hospitals except in patients brought to the hospital already infected. In two hospitals in Los Angeles, of which I know the statistics, no death from infection has occurred in the past five years. Deduction from these statistics warrants the statement,

then, that ten to twelve thousand women could be saved annually in the United States through hospital care during confinement.

Another fact well known is that more deaths occur from accidents of the third stage of labor than from the first and second combined. About half of these deaths are due to postpartum hemorrhage, and it is estimated that about 1100 to 1200 women die of it annually in the United States. This complication is one very difficult to cope with in the home because of lack of assistance and equipment, both of which one has sufficient of in a hospital. In the dispensary service of the University of Pittsburgh I had charge of 3300 deliveries in a period of three years. The only deaths we had during or immediately after delivery were three due to postpartum hemorrhage, and these were due to the physician being alone, and without sufficient equipment to handle the complication. All three deaths could have been prevented in a hospital, but death occurs too quickly for removal to a hospital, or even to secure assistance.

The author states that the mother is more contented at home surrounded by her family, and therefore will have a better recovery. In my opinion the family surrounding her with all its troubles and worries is just the thing from which the mother should be removed during her convalescence. The mother will return to normal more quickly and have a better milk supply for her baby if kept in bed where she can rest and be relieved of the responsibility of the household. Few patients can be kept in bed ten to twelve or more days at home. They will arise in spite of the physician's advice, a thing they cannot do in the hospital.

Finally the economic side of the question must be considered. Many hospitals and most of the small maternities offer a complete maternity service of ten to fourteen days for from \$65 to \$100. Comparable service cannot be given in the home for less when one takes into full account the expenditures necessary at home. Supplies for the labor cannot be secured for less than \$10 to \$15. A practical nurse for twelve days at \$5 per day and food for the mother and nurse at not less than \$1.50 per day for both added to the above equals what the hospital charges. Add to this an anesthetic fee and the possibility of having to go to the hospital per ambulance for some complication, and the financial argument is in favor of the hospital. This is, of course, for comparable services.

As stated before, we have insufficient hospitals to care for all confinements and a certain number must be conducted in the home. Certainly there should be some improvement in this class of service. I believe the solution is the specialization of one or two physicians in every small community in obstetrics, and all confinements be referred to them. They in turn avoid all infectious diseases and become expert in their special line. Elimination of midwives and irregular practitioners as attendants on obstetric cases and proper financial compensation of the expert will do much to solve the problem of home obstetrics until sufficient maternity hospitals can be built.

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J. W. FARRELL, M. D. (308 Westlake Professional Building, Los Angeles)—When the day arrives that all maternity is cared for by adequately trained obstetricians and each case given the thought, consideration and supervision that prevails in our better equipped present-day maternity wards there shall no longer be reason for discussion as to the relative merits of home versus hospital obstetrics. There should be no difference. Any man or woman who undertakes the care of the expectant mother should be born with an "obstetric conscience." I feel that this is the prime requirement for the making of a good obstetrician. Judgment, technique and niceties may be acquired by experience, training and hard work.

The point then resolves itself into, which taxes our conscience the greater: the home or the hospital? The balance is about equal. The lazy man, the man void of conscience, will sleepily hear of his patients'

admission to the hospital and in turn instruct the nurses or interns on duty to call when the head is on the perineum. This man, not calling one whit on his conscience, disregards all the grave possible disasters that might befall his patient while he so blissfully forgets and neglects her, and relies on the judgment and conscience of a nurse or recent graduate to call him.

This same type of man in 90 per cent of cases more flagrantly neglects his patients prenatally, and soon forgets them after the cord is tied. But the same man dealing with cases in the home will cause more disaster and morbidity to his patients. Here he has to contend with an excited family as well as the patient. They will call him frequently and, as he will consider, needlessly. The anxiety of the family will instill in him an unconscious desire to quickly terminate the case. A faltering conscience and weary physique will quickly eventuate in the injudicious administration of pituitrin in premature attempts at operative delivery.

My long experience with the Los Angeles City Maternity Dispensary leads me to feel in accord with Doctor Fist that babies born in the home do meet with a better milk supply. But upon analysis I cannot but feel that it is the type of patient here encountered rather than the environment that is most conducive to the adequacy of milk supply that accounts for this apparent advantage.

In the hospital, nurses or interns can be trained to auscultate the fetal heart tones at necessary intervals. In the home a trained person should be present at all times, but such a person is hard to obtain.

When it comes to the actual delivery of the case all home technique should be absolutely intensive. No matter how much sterile equipment we bring to the home (and the smallest amount the better) we should consider and use as a working basis only a very limited field as being sterile, or clean is a better word to describe it. How feasible is it then that we should examine in the home each case for minor lacerations of the cervix? Yet this in the well-equipped maternity is a procedure unattended with risk or danger to the mother.

I agree that perineal lacerations in the home, when properly repaired, as a rule heal kindly. However, episiotomy in the home is not well accepted by the laity, and until they are so educated to accept it the home obstetrics shall suffer from want of a necessary procedure.

Doctor McNeile and I are vastly proud of our record on the maternity service in dealing entirely with home cases; but I feel that overshadowing our good statistical reports is the fact that this service has been instrumental in the training and stimulating of obstetric consciences in many young interns, who will continue to let this guide them in their obstetric practice whether in the home or hospital.

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E. T. RULISON, M. D. (California State Life Building, Sacramento)—It would seem not only a difficult matter, but an inadvisable one to popularize a "Back to the Home Obstetrics" campaign. Hospitals in this country in the past few years have rapidly metamorphosed from their "boarding-house" status to their proper status of truly scientific institutions, and as such may and should be trusted and employed by our expectant mothers during that ever dangerous crisis of childbirth. While it is true that a majority of the babies still pass beneath the "Triumphant Arch" and find their first resting place on a pile of newspapers in the center of a sagging mattress while the obstetrical attendant stands with one knee on the bed to relieve his aching back, more and more women are each year demanding aseptic hospital service. The idea that childbirth is a surgical procedure has been spreading rapidly throughout the urban communities, and it will soon be exceptional to encounter women other than those of the emigrant class who will prefer to have their babies at home. Women are realizing that the hospital maternity service is safe and more economi-

cal, and that their lying-in period spent in the institution is a happier one. Women instinctively feel in a hospital with a well-organized service that they are in competent hands. With modern methods of amelioration of the agony of labor pains, with the possibility of excluding unwelcome and annoying visitors during the first week of the puerperium, with the crying or fretful baby happily out of hearing, with the food uniformly good and well selected, with the electric breast pump and other modern devices to meet the unpleasant complications that arise, what woman would choose the home with its inconveniences, its annoyances and dangers?

Would it not be better to continue our efforts in behalf of better maternity services in our present hospitals and the construction and endowment of more maternity hospitals throughout the country. This should be a matter of concern to our women in public life. The needless sacrifice of twenty-five thousand of our splendid American women yearly still goes on. It is an indictment of our profession that may best be met by hospitalization of all maternity cases. It is inconceivable that midwives and those physicians who are responsible for the high mortality in obstetrical cases can ever by any means be educated, exhorted or forced to change their slovenly, death-inviting methods.

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DOCTOR FIST (closing)—A well-conducted hospital is undoubtedly the best place for confinement. However, since delivery in the home, which has points in its favor as well as against it, is the method available to the greater number, it merits our consideration. With an annual mortality of about twenty thousand mothers and two million babies, it is high time that we attempt to improve home obstetrics.

We should not abandon or neglect the delivery room, but we must take care of home confinements. It is much easier to neglect the patient in the home where greater attention should be given to care from the time of conception to the end of the puerperium. Operative correction of diagnostic mistakes is not nearly so easily performed in the home.

Proper service must include: instructions to patient, prenatal care throughout pregnancy, and for at least six weeks postpartum if normal.

Doctor Farrell has spoken of the low out-patient mortality of the Los Angeles Maternity Dispensary, and of the interns trained there, under the direction of Doctor McNeile and himself. In my opinion this type of instruction is invaluable and should be prerequisite to the practice of obstetrics. Education of those who deliver the great number of patients is absolutely necessary. The Department of Health of the state of New York made a step in the right direction by inaugurating lecture courses in obstetrics for physicians in rural districts. The improvement in technique and decrease in mortality which would follow such lectures in all states would be well worth the expense and effort.

Doctor Irwin has well brought out the fact that many deaths are due to hemorrhage during the third stage of labor. Proper conduct of the earlier stages of labor would greatly decrease the number of these.

Careful prenatal supervision is indispensable. In the majority of cases rectal and abdominal palpation suffice to furnish all necessary information as to progress. Avoidance of invasion of the birth canal is fundamental. Heart sounds of mother and baby must be watched at frequent intervals. Proper scrubbing of hands and use of sterile linen, now so easily obtainable, eliminate much danger. Active supervision of the second stage should always be the rule. These things are all possible, but education of those engaged in home obstetrics must precede general improvement in that work.

Without decrying efficient hospital service for abnormal birthbirths, a plea is again entered for more efficient care of normal births in the home.

TERATOMA OF THE TESTICLE—DIAGNOSIS AND TREATMENT

By EDWARD J. KILFOY, M. D.
Los Angeles

DISCUSSION by Foster K. Collins, M. D., Los Angeles; Frank Hinman, M. D., San Francisco; A. A. Kutzmann, M. D., Los Angeles.

WHEN a patient presents himself with enlargement of the testicle the clinician or surgeon is confronted with a difficult problem and must consider that its diagnosis entails as much study as a cross-word puzzle.

The clinical diagnosis of teratoma of the testicle is difficult, as the physical findings are almost identical with those of other testicular tumors. The clinical diagnosis is usually determined after exclusion of the following different conditions: carcinoma, sarcoma, hydrocele, gumma, tuberculosis, hematoma, spermatocele, acute epididymitis, varicocele, bubo, and torsion of the spermatic cord. The most frequent conditions that have to be eliminated are lues, hydrocele, and tuberculosis. Gumma of the testicle resembles a tumor more closely than any of the other conditions. One must not forget that generalized lues and malignancy of the testicle may be coexisting in the same individual. A positive blood reaction is no excuse for prolonged delay for antiluetic treatment, as it is the lesser of the two evils to remove the gumma surgically than to delay operation on a highly malignant testicular tumor for antiluetic treatments.

Some cases of hydrocele and hematocoele present difficulties of differentiation by clinical means. In a hematocoele the transillumination of light often fails, also the feeling of fluctuation on palpation. There are certain cases of teratoma that contain cartilage or mucoid material which may transilluminate light and give fluctuation on pressure and these must be ruled out. Hydrocele may be present and completely mask the presence of the teratoma, as it did in one case in this series. When the size of the hydrocele masks the diagnosis, aspiration of the hydrocele should be done, followed by palpation of any tumor, if present.

Tuberculosis rarely presents much difficulty in diagnosis, as it is usually coincident in some other part of the body. The only type of case that might present some difficulty would be a case of tuberculo-epididymo-orchitis, a very rare condition.

The symptoms are of a local and general character. The patient usually presents himself for examination complaining of a swollen testicle, a hernia, or fluid in the testicle. Several patients complained of backache, and they were innocent of any coexisting testicular enlargement. In the medical cases the patients complained of an abdominal growth and did not know there was either a tumor of the testicle or an undescended testicle on the side involved. The general symptoms are those of any active organic disease, such as weakness, malaise, loss of weight and strength, loss

* Read before the Southern California Medical Association, March 18, 1927.

(The clinical case records for this paper came from the files of the Mayo Clinic, Rochester, Minnesota.)

of appetite, constipation, headache, and a mild secondary anemia.

On physical examination the teratoma may vary in size from a normal testicle to that of a large grapefruit. The teratoma usually retains the shape of the normal testicle. Occasionally there are areas that are irregular in outline and fluctuate on pressure. These areas are areas of degeneration within the teratoma itself. Teratoma are usually hard, smooth and tender on light pressure; the overlying skin is never involved and is freely movable over the teratomatous mass.

The potential high degree of malignancy, and the simplicity of an exploratory examination under local or gas anesthesia demand that each and every case of testicular enlargement should be so examined under anesthesia and tissue submitted for microscopic study to a competent pathologist. Further procedure will then be carried out according to the nature of the tumor. If examination is made in this way, an accurate diagnosis and prognosis of all testicular tumors can be made. Not until this is a routine procedure will a correct diagnosis be made in many testicular tumors.

Prognosis of the clinical course of teratoma depends upon a correct diagnosis of every testicular enlargement. If the tumor be strictly teratoma and the operation is done very early, followed by x-ray or radium and sometimes by both, the prognosis will be much more favorable.

METASTASIS OF TERATOMA OF THE TESTES

There are several courses in which teratoma of the testicle may metastasize. The most frequent of these are by the prevertebral system of lymph nodes. The primary lymph node involvements are the lumbar on the aorta for the left, and on the vena cava for the right, between the bifurcation of these vessels. The first work done as regards the lymph drainage of the testicle was performed by Most in 1899. Since then additional work has been done by Cuneo,² and Jamieson³ and Dodson. Most, in his work, found no barrier between the testicle and the thoracic duct except the lumbar nodes which are imperfect, and the drainage goes directly to the subclavian vein. This is the route followed usually in general metastasis. The lumbar nodes are usually involved early, long before the tumor becomes any definite size. Figures 1 and 2 show the lumbar lymphatic nodes involved by secondary metastasis.

The second route of metastasis is through the accompanying veins of the ductus deferens, and this accounts for the pulmonary metastasis and metastasis of the liver, brain, and occasionally the kidneys.

The third place of metastasis is to the inguinal lymph nodes, and this usually occurs in those cases where there is a generalized lymph adenopathy, and where there are other findings of generalized metastasis. This always occurs late in the course of the duration of the teratoma.

The time necessary for metastasis to occur is very variable. Large metastases have been found in cases of short duration and vice versa. Autopsy and surgery have confirmed that teratoma spread

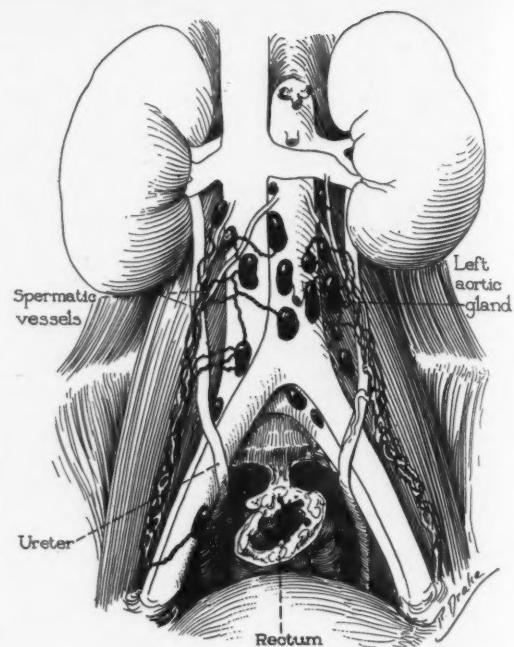


Figure 1—Shows the lumbar nodes involved by secondary metastasis.

more rapidly than unicellular tumors according to Chevassu. No doubt such lesions as teratoma and carcinoma have metastasized long before the primary growth is of a noticeable size. Therefore if surgical interference is to be done it should be employed as soon as possible. The size of the primary tumor has no ratio to the extent of the secondary metastasis. The secondary metastases are the lesions that always take life, as the vital organs are then involved.

On microscopic study, the secondary node may be identical with the primary, or may reproduce only one of several different features of the pri-

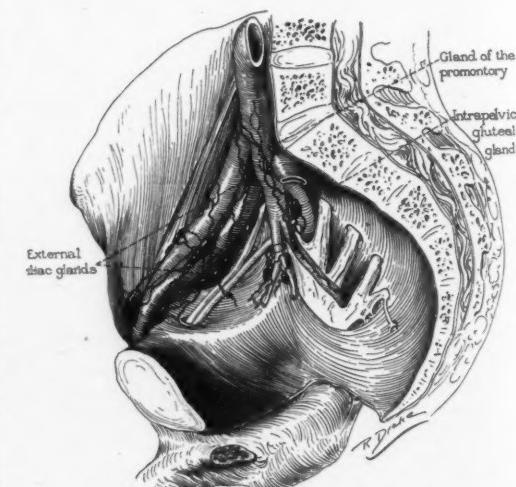


Figure 2—Shows the lateral view of the lower lumbar and sacral lymph nodes involved by secondary metastasis.

mary growth. The secondary nodes oftentimes may be as complex as the primary tumor itself. The secondary nodes in the mediastinum and cervical regions grow very rapidly and in a large percentage of the cases are the cause of death from mediastinal pressure on the heart and lungs causing cardiac and pulmonary embarrassment.

STUDY OF CASES

In this series of ten surgical cases of teratoma of the testicle, which were proven by microscopic study, the average age was found to be 29.5 years. The youngest patient was twenty-four and the oldest patient forty. Between ten and twenty there were no patients; twenty to thirty there were five patients; thirty to forty there were four patients. Between forty and fifty there was one patient. Beyond the fifth decade there were no patients. The average duration of symptoms was found to be 11.5 weeks. Of course the duration of symptoms cannot be exact, as many of the patients did not know the exact time the lesion began to grow.

Teratoma is always unilateral and occurs as frequently on one side of the testicle as the other. There was a history of injury in three cases. No doubt some of the others had had injuries, but of such slight nature that they did not mention it. Only one patient gave a definite history of neisserian infection. A positive blood Wassermann was not reported in a single case. The urine was negative and so was the blood count except for a mild secondary anemia in several of the advanced cases. All the patients except the first two, as reported in Table 1, had x-ray or radium or both.

There are five patients living and five patients dead. Of the patients living, the tumor was found by microscopic study to be teratoma; and in

Case 3 the presence of carcinoma is questioned, as the patient is living and in good health. In Case 4, the pathological report showed adenocarcinoma of low-grade malignancy, and this was followed with x-ray and radium, and the patient was living on June 1, 1924. In the five patients that died, carcinoma was easily demonstrable, and they all died within a year after the time of the operation. Four of these patients had x-ray or radium, but the prognosis would have been the same no matter what procedure had been carried out. If carcinoma is coexisting in a teratoma the tumor is very highly malignant and the duration is short. If the tumor is a straight teratoma the prognosis is more hopeful, and the longevity may be indefinite as in Case 2, which patient is still living, eleven years after the operation. This shows that tissue from all testicular tumors in which secondary metastases are not demonstrable should be diagnosed by a competent pathologist. When carcinoma is coincident a more guarded prognosis can be made, and further x-ray or radium treatments can be carried out.

Table 2 represents a series of twelve medical cases; the exact diagnosis was not confirmed by the pathologist in this series of cases. Some of the cases were diagnosed as teratoma elsewhere. None of the patients in this group was operated upon. Seven of the patients had no known pathological diagnosis. In four of the patients the diagnosis was teratoma and in one the diagnosis was mixed tumor. There is no doubt that these patients also had areas of carcinoma, because at the time of examination large secondary metastases were found in the retroperitoneal, mediastinal, and cervical regions. Seven of the patients had had previous operations elsewhere and the other five had had no surgical procedure.

The average age was found to be 31.1 years,

TABLE 1—*Surgical Cases of Teratoma: Diagnosis Verified by the Pathologist*

Case	Age	Duration	Side	Injury or Metastasis	Operation	Pathologic Report	Treatment	Died	Living
1	26	6 weeks	Left	Injury at age of 11	Orchidectomy July 13, 1914	Teratoma and carcinoma	None	1-11-15	
2	30	4 months	Left	None	Orchidectomy and removal inguinal nodes March 7, 1913	Teratoma	None		March, 1924
3	24	9 weeks	Left	Injury, March, 1922	Castration and removal inguinal nodes May 8, 1922	Teratoma and carcinoma, cartilage, muscle, myxomatous tissue	Many x-rays		6-22-24
4	32	3 months	Right	None	Castration October 23, 1922	Teratoma and adenocarcinoma	X-ray and radium		6-1-24
5	33	7 weeks	Left	None	Castration May 2, 1918	Teratoma and carcinoma	None	6-24-18	
6	23	4 weeks	Left	Injury at age of 12 and 18	Orchidectomy March 3, 1917	Teratoma with hair and cartilage	X-ray and radium		7-1-24
7	29	3 months	Right	None	Orchidectomy Dec. 24, 1917	Teratoma and carcinoma	X-ray	8-31-18	
8	40	8 months	Right	Palpable inguinal nodes	Orchidectomy and removal inguinal nodes April 7, 1925	Teratoma and highly malignant carcinoma	X-ray	7-1-24	
9	34	3 months	Right	None	Orchidectomy Nov. 11, 1921	Teratoma and carcinoma	X-ray		1-26-25
10	24	2 months	Right	None	Orchidectomy Oct. 15, 1924	Teratoma and carcinoma	X-ray and radium	4-25-25	
Average 29.5		11.5 weeks	5 cases right; 5 cases left	3 with history of injury				5 dead	5 living

TABLE 2—*Medical Cases of Teratoma*

Case	Age	Chief Complaint	Duration	Injury or Infection	Treatment	Pathologic Diagnosis	Clinical Diagnosis	Result
1	40	Soreness in the abdomen	2 years	Injury to left testicle 2 years previously	Removal of testicle elsewhere 3 years previously		Teratoma of testicle, mediastinal metastasis	Died May 20, 1924
2	21	Tumor of left testicle	3 months	No injury or infection	Orchidectomy in 1921 elsewhere. X-ray and radium	Mixed tumor	Teratoma of testicle with retroperitoneal involvement	Died January, 1925
3	55	Mass in right suprapubic area	2 months	No injury. Gonorrhea	None		Teratoma of undescended testicle	Not known
4	33	Backache	3 months	Gonorrhea. No injury	Right orchidectomy in 1917, elsewhere		Teratoma of testicle; metastatic nodes in neck and lungs	Died January, 1924
5	30	Lump in right abdomen. Left testicle absent	1 year	None	Castration elsewhere; X-ray		Teratoma of undescended testicle	Living in January, 1925
6	21	Swelling in right testicle	2 months	None	None		Teratoma of right testicle	Not known
7	45	Pain in back	6 months	Injury to right testicle 2 years previously	None		Teratoma of right testicle with metastasis to mediastinum, lungs, retroperitoneum	Died May, 1921
8	29	Backache. Mass in lower right quadrant	5 months	None	None. X-ray advised		Teratoma of the testicle, metastasis to lungs and mediastinum	Died Dec., 1919
9	41	Enlargement of left testicle	7 months	None	Castration in 1916. Coley's fluid. X-ray elsewhere	Teratoma	Teratoma of left testicle, metastasis to lungs	Died March, 1919
10	37	Pain in right inguinal region	3 months	None	Right castration March, 1917	Teratoma	Teratoma, with large cervical nodes, metastasis to lungs	Not known
11	39	Tumor in region of right kidney	1 year	None	Laparotomy, Feb., 1917, elsewhere	Teratoma	Teratoma of undescended testicle	Not known
12	32	Backache	2 years	None	None	Teratoma	Metastasis to retroperitoneal nodes	Not known

and the age of incidence was as follows: between ten and twenty, no cases; twenty to thirty, three cases; thirty to forty, five cases; forty to fifty, three cases; and beyond the fifth decade there was one case. Only two of the patients gave a history of injury and one gave a history of Neisserian infection. One patient had a diagnosis of a mixed tumor. Teratoma was diagnosed in four patients, and in seven the exact diagnosis was not known. Of this group, six of the patients are dead, and in five others it was not possible to obtain any data. There is one patient living in which a castration was done elsewhere, followed by many x-ray treatments. At the time of physical examination eight of the patients had demonstrable secondary metastases to the retroperitoneal, mediastinal, and cervical regions. The other four patients had diagnoses of teratoma in undescended testicle.

TREATMENT

The treatment in cases of teratoma is a problem that confronts one after the diagnosis is made. The size of the primary lesion is no indication of secondary retroperitoneal metastasis, and this must always be kept in mind. Oftentimes they are present and there is no demonstrable way to show that they are present. The operation as followed in this series of cases was castration, removal of the vas, and neighboring inguinal lymph nodes. The more radical operations as described by Hinman,^{3,4} may be carried out with success with a fairly low surgical mortality. The advantage of the radical operation is that the

lymph nodes that are primarily involved are removed.

In this series a simple operation was performed with no surgical mortality and the operation was followed by x-ray or radium and sometimes both, with fairly satisfactory results in cases in which carcinoma was found not to exist or of a low-grade malignancy if present. Some authors state that simple castration will cure from 10 to 20 per cent. Others state that simple castration is as good as "no operation at all." The surgical operation will depend upon the type of tumor and the grade of carcinoma if present. If high-grade carcinoma be present the prognosis is the same whatever operative procedure is carried out.

The x-ray and radium therapy are very valuable adjuncts in the treatment of this type of tumor, but are far from being curative, as reported by Barringer¹ and Dean after four years' follow-up treatments and repeated examinations. Some authors advise x-ray preoperatively, but this has not been tried in this series of cases. If the tumor is so large that it requires preoperative x-ray there is no need of surgical intervention. It has long been a known fact that the more embryonic in type the better the tumor responds to x-ray therapy. If this holds true, then in cases of true teratoma the x-ray is of great value, and is indicated in heavy and repeated doses, especially during the first year after the operation. After the first year all patients with or without metas-

tasis should receive some x-ray therapy as an additional safeguard.

Regardless of how careful one may be and of the surgical procedure employed, the prognosis must always be guarded and the patient kept under observation from time to time. If carcinoma is demonstrated by the pathologist the patient must be closely watched for mediastinal and cervical metastasis. This requires repeated check-up examinations and x-ray pictures of the thorax. Not until this is carried out will the patient be given the chance to which he is entitled to carry on against the disease.

CONCLUSIONS

1. Teratoma may occur at any age, but they are most likely to occur between the second and third decades, which is the age of sexual prime. The average was found to be twenty-nine and five-tenths years.

2. Teratoma of the testicle is potentially malignant to a high degree, and the size of the primary tumor is no criterion as regards the duration of the lesion, or the size of the secondary metastasis. If carcinoma is coexisting in a teratoma the prognosis is extremely bad. If the lesion is strictly teratoma the prognosis is much more favorable.

3. Because of the difficulty in making a correct clinical diagnosis, every questionable testicular tumor should be submitted to surgery and the tissue examined by a competent pathologist in order to make a correct diagnosis and a guarded prognosis.

4. Teratoma are much more frequent than stated in the literature, if the slide and gross specimens are thoroughly studied. The relative amount of blastodermic tissue varies greatly in different specimens.

5. The surgical treatment should consist at least of castration, including the vas and inguinal lymph nodes. The radical operation should be left to the choice of the surgeon. The surgical procedure should be followed up with x-ray or radium and sometimes both. X-ray and radium are very valuable adjuncts in the postoperative treatment.

6. After the patient has been dismissed he should be instructed as to what to look for, and to report every three months for the first year for a check-up examination. After this he should report every six months for the following five years for a check-up examination for metastases and x-ray therapy if indicated.

709 Medical Office Building.

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DISCUSSION

FOSTER K. COLLINS, M. D. (412 West Sixth Street, Los Angeles)—This paper by Doctor Kilfoy is a distinct contribution to the literature on the subject of teratoma of the testicle.

About 1911 Ewing gave his well-known contribution on this subject. At that time he claimed that, after excluding gumma, tuberculosis, and hematoma, practically all true tumors of the testicle were malignant and, including carcinoma, had not been shown to exist apart from teratomatous origin.

Young, in the year 1926, stated that Ewing might be correct.

It is thought that all normal testes contain "sex cells" in the reta testes that are the potential cells of the origin of teratoma. These usually suppressed cells are ready to express themselves in teratomatous changes after they are stirred up by some infection or irritating process.

The practical thing, from the viewpoint of general surgery, is to remember that the early malignant teratoma, so far as the testicle is concerned, is confined within the tunica albuginea, and, because the tumor is therefore smooth and lacks irregular, hard characteristics, may be easily overlooked in its early stages.

Early metastasis is by the lymph nodes along the cord, pelvic and abdominal vessels. These nodes may be of large size, fairly early, while the testicle still shows none other than a smooth tumor confined within the tunica albuginea. To await testicular manifestations outside the tunica albuginea is to lose control of the situation.

As Doctor Kilfoy has said, the high degree of malignancy in testicular tumors is such that every case should be explored and the tissue submitted for microscopical study. Radical removal in positive cases, followed by radiation, is the proper course.

Because a hydrocele may coexist with teratoma it is a very practical point that in the treatment of all hydrocele the testicle should be carefully examined for tumor, otherwise since local enlargement is frequently the only early symptom, the patient may lose the only chance he has to recover from a malignancy.

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A. A. KUTZMANN, M. D. (1052 West Sixth Street, Los Angeles)—This excellent presentation by Doctor Kilfoy is timely since the diagnosis and treatment of testicular tumors, especially the latter, have always presented many problems. Our present knowledge of diagnosis, clinical course, prognosis and treatment of testicular tumors emphasizes that nearly all are malignant and that an accurate and early diagnosis is essential.

An analysis of the present theories concerning the pathology shows that there are but two types of testicular tumors, both of which are malignant—the teratoma or mixed tumor, and the seminoma or unicellular type of tumor. This could be further simplified if we accept Ewing's theory, that all tumors are of teratomatous origin, and that a unicellular tumor such as the seminoma be considered as an overdevelopment of one tissue in a tumor tridermal in constitution. Recently in conjunction with Doctors Hinman and Gibson additional evidence was offered to Ewing's theory when we were able to find in a single specimen, mixed tissues of various types growing abundantly with the typical seminomatous tissue. Pathologically the differences of these two types of growths can be seen in the gross and microscopic studies. The seminoma presents

grossly a uniform, solid picture and microscopically a solid medullary growth in which other types of tissue are rarely found. Other teratoma present grossly a characteristically complex cystic picture and histologically an equally complex picture in which can be seen various types of carcinomatous proliferation, cystic spaces lined by different types of epithelium, islands of squamous cells, cartilage, etc., all supported upon a more or less abundant connective tissue stroma.

The use of the phrases "carcinoma coexisting in teratoma," "adenocarcinoma," etc., by the author is apt to be confusing. It is well to remember that the teratoma is a tumor of tridermal origin; that in general the malignant elements in such mixed tumors of the testicle (teratoma) are almost uniformly epithelial in type and therefore carcinomatous in nature; that these carcinomatous elements in the teratoma are generally amenable to classification into one or more of three groups; (a) trophoblastic-chorio-epithelioma; (b) hypoblastic-adenomatous type; (c) epiblastic-solid alveoli of basal cell type and tumors of the neurocytoma group. Hence the term "teratoma testis" should be used inclusively and as such signify all these types of degeneration.

The treatment has resolved itself into three groups: (1) simple orchidectomy; (2) orchidectomy with a radical resection of the preaortic lymph nodes; (3) orchidectomy with radiation. Orchidectomy even with early diagnosis has been a failure, carrying with it an ultimate mortality of 85 per cent due to the metastatic processes of the disease. There is sufficient statistical evidence to prove the inadequacy of this procedure. Reports of 50 per cent cures, such as Handfield-Jones', are far too optimistic and do not represent the true statistics. Realization of the ineffectiveness of orchidectomy has stimulated surgeons to greater efforts and to bring forth the second and third methods of treatment. These are based upon a knowledge of the testicular lymph drainage which plays an important part in the metastasizing and rendering most treatment ineffective.

In a recent analysis of personal cases and cases from the literature, Hinman showed that the cures had been increased 100 per cent by means of the radical operation. Cases with metastases to the preaortic lymph glands were still living, some over four years with no sign of the disease, following radical removal. This operation is based on the principle that attack on a malignant tumor and its lymph drainage to be successful must be whole-hearted.

Radiotherapy as advocated by Barringer and Dean has produced some excellent results, especially in cases designated as "recurrent inoperable." This should not be surprising when it is recalled that the x-ray and radium have been found to exert a specific action on the spermatogenic cells, with no tendency to destroy other tissues. The slowly increasing number of case reports in the literature and the writer's experience have shown the seminoma type of testicular tumor to react the most favorably to this type of treatment. From observations, I believe that at present the most efficient treatment is the radical operation for the mixed type (teratoma) of tumor, with orchidectomy and deep therapy in the unicellular (seminoma) type.

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FRANK HINMAN, M.D. (384 Post Street, San Francisco)—Doctor Kilfoyle has presented a very good outline of the diagnosis and treatment of tumors of the testicle. There is little to add in the way of discussion, particularly after having read Doctor Kutzmann's discussion inasmuch as my opinion conforms to his with respect to nomenclature and treatment particularly.

With respect to the routes of metastasis of malignant tumors of the testicle, it is quite apparent from

what is said in the paper that the prevertebral lymph nodes are the primary and most important zones. As to the metastasis from inguinal lymph nodes, this does not occur unless the integuments covering the testicle are involved by invasion, which occurs only in very late stages of the disease. There is no object, therefore, in removing the neighboring inguinal lymph nodes at the time of an ordinary castration.

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DOCTOR KILFOY (closing)—I wish to thank Drs. Collins, Kutzmann, and Hinman for their timely discussions of this paper.

The classification of testicular tumors varies considerably according to the author, and is badly in need of a standard classification. The operation to be performed should be left to the judgment of the surgeon and the clinical findings of the patient. I doubt if all the lumbar and sacral lymph nodes are removed in doing the radical operation, and if they are not all removed the primary purpose of the operation is defeated.

INTERESTING FACTS ABOUT THE HEART*

WITH AN ANALYSIS OF CASES

By ARTHUR E. MARK, M.D.

Los Angeles

DISCUSSION by Harry Spiro, M.D., San Francisco; James F. Churchill, M.D., San Diego; Donald Jackson Frick, M.D., Los Angeles.

HEART disease has supplanted tuberculosis and cancer, and now leads in yearly fatalities. It is estimated that in this country 100,000 people die each year from organic heart disease.

Cohn¹ reports that approximately 2 per cent of the population of the United States are suffering from this affliction. These figures do not include the deaths from other diseases which frequently terminate in cardiac failure. For example, F. T. Billings² states that death in pneumonia is in the large majority of cases one of cardiac failure.

In practically all conditions which assume a critical state and especially in postoperative reactions, our greatest problem is to give adequate support to the heart.

CAUSATIVE FACTORS IN HEART DISEASE

The causes of heart disease are numerous and in many cases difficult to determine. Investigations into the various etiologic factors reveal many interesting facts and possibilities. Early in life rheumatic fever, tonsillitis, chorea, and other infectious diseases, are the principal factors causing carditis, while in later life arteriosclerosis, hypertension, nephritis, and syphilis, are the principal exciting causes.

In an analysis of 1001 cases of organic heart disease among adults, Wyckoff and Lingg³ found that about one-fourth of the cases presented rheumatic heart disease; about two-fifths, arteriosclerotic; about one-tenth syphilitic; and about one-tenth, heart disease of unknown origin. Scarlet fever, hyperthyroidism, nephritis, etc., together contributed to less than one-tenth of the total. Many other interesting facts are given in their

* Read before the Southern California Medical Society, November 6, 1926.

paper. For example, they state that rheumatic fever was rare after 50 years of age, syphilitic heart disease was rare before 40 years of age, etc. In an analysis of a series of cases as the above, extreme difficulty arises in ascribing a single cause to many individual cases. That all-important factor, heredity, plays a major rôle in heart disease, as well as in arteriosclerosis, hypertension, and nephritis.

Environment is also of extreme importance. The American nation as a whole is living a life of extremes. We are more prone to overdo or underdo, the fine balance which is most productive of good health being struck by few. This applies especially to eating and to exercise. Over-eating with the resultant obesity is one of the most prolific causes of cardiovascular renal disease. Improperly balanced diets, especially those containing excesses in protein, are marked sins of commission. Too little rather than too much exercise is the rule. There is, however, a certain danger in the latter especially after middle age. One of the most difficult lessons to learn is that we cannot do so much in later life as we did in our earlier years.

At this time I wish to emphasize the congenitally small heart. Many individuals possessing this are able to handle the ordinary exigencies of life, but absolutely incapable of responding to undue stress and strain without disastrous results.

The heart which has become hypertrophied as a result of exercise, the athletic heart, as it is commonly termed, is probably always accompanied by some dilatation. According to Pardee,⁴ hypertrophy usually includes a certain degree of dilatation. Even though no dilatation is present it is hardly a normal heart. The tendency to let down on exercise and often to cease all activity over a number of years paves the way for degenerative changes in the hypertrophied heart. The tonsils have been considered as being very closely associated with rheumatic fever. The common association of rheumatic fever and tonsillitis has fostered this idea. Many patients, however, develop rheumatic fever without any antecedent tonsillitis.

Kaiser⁵ showed from a comparison of a large series of children who had had tonsillectomies with children in whom the operation had not been performed that there is no decrease in the rheumatic syndrome or in cardiac disease. Hunt⁶ and Hamberger⁷ have also emphasized this.

It is quite logical to assume, however, that the tonsils are the original foci in many cases. Recurrences following their removal would indicate the presence of secondary foci or other primary foci, as the teeth, sinuses, prostate, etc.

In many cases constitutional tendency plays a part. Many families show a marked rheumatic tendency.

In a consideration of infectious diseases one cannot but believe that influenza and even repeated ordinary colds are a common cause of cardiac damage. The latter may be very slight and symptoms such as precordial distress, palpitation, dyspnea, and increased pulse rate, may disappear within a very short time. It is logical

to assume that in many of these cases even though the symptoms absolutely subside, a certain degree of cardiac damage remains.

The frequent involvement of the aortic valve in infectious diseases, especially in rheumatic fever, has markedly changed our ideas regarding the constant etiology of syphilis. While syphilis is a common cause of aortic valve lesions, it plays a minor etiological rôle when the trouble appears in the young.

As already brought out by Wyckoff and Lingg,⁸ syphilitic heart disease is rare before 40 years of age. This statement, however, is subject to some modification.

According to Tasker Howard,⁹ there is a widespread distribution of the invading organism in patients with early syphilis. He further states that the few autopsies that have been performed at this stage of the disease show the offending organism in the heart and aorta.

Willius¹⁰ has shown that a period of nineteen years elapses between the initial infection and the actual development of symptoms. This shows very definitely the insidious nature of syphilitic heart disease, and in this respect it is quite comparable to nervous system syphilis.

In exophthalmic goiter and thyrotoxic adenoma the degree of cardiac involvement is dependent upon the duration of the thyrotoxicosis, as well as upon its intensity. The thyrotoxicosis associated with thyrotoxic adenoma is prone to cause more cardiac damage than is the hyperthyroidism associated with exophthalmic goiter.

Murmurs due to exophthalmic goiter or thyrotoxic adenoma are systolic in time and usually loudest over the third interspace; but may be loudest over the apex, with a variable transmission. Both murmurs may be present.

Willius, Boothby, and Wilson,¹¹ report the above murmurs as occurring in .41 per cent of a series of exophthalmic goiter patients and in 51 per cent of a series of thyrotoxic adenoma patients. In only two instances in the group were the murmurs due to endocardial valvular disease. It is surprising how frequently these murmurs exist, and how often the actual nature is misinterpreted and these patients designated as true cardiopaths.

DIAGNOSTIC AIDS

Since the causes of heart disease are so numerous, and since a combination of factors often contributes to the cause, it is of extreme importance to utilize every diagnostic procedure. Additional methods for the determination of cardiac enlargement should supplement auscultatory examination.

The x-ray has aided materially in this, and a properly done orthocardiogram is by all means the most accurate method. The x-ray, however, should not entirely replace physical examination. The routine careful determination of the size of the heart by physical examination should always precede x-ray examination, the latter being used more as a check and an aid to develop accuracy. One repeatedly hears the statement made that it is impossible to determine the cardiac borders, especially the right, with any degree of accuracy. This is true in very occasional cases, but my expe-

TABLE 1—*Analysis of Cardiac Measurements (in Centimeters)*

Case	Base				Right				Left			
	Pal.	Per.	Aus. Per.	X-ray	Pal.	Per.	Aus. Per.	X-ray	Pal.	Per.	Aus. Per.	X-ray
1	5	4.6	4.6	5.1	3.8	3.9	3.8	4.7	10	10.2	10.4	10.7
2	5.5	5.6	5.6	6.5	4	4.2	4.3	5.2	11.5	11.8	11.5	12.8
3	5.2	4.8	5	4.5	4	4.2	4.4	5.8	10	9.8	9.8	8.8
4	3.5	3.4	3.5	3.6	3.5	3.6	3.4	4	8	8.1	8.2	8.3
5	4	4	4.2	3.8	3	3.2	3	3.2	9	9.2	9	9.6
6	4.2	4.2	4.4	4	5.2	5.4	5.2	5.7	9.2	9.4	9.4	9.2
7	6.5	6.8	7	7.6	5.5	5.6	5.5	7	12.5	12.5	12	10.5
8	6	6.2	6.2	6	4.8	5	5	4.2	12	12.2	12	11.9
9	5.5	5.8	5.5	5.9	5.2	5.5	5.2	5.7	11.3	12	11.5	13.8
10	5.5	6.5	6.8	8.1	7	7.2	7	6	13.5	13.6	13.5	13.8
11	6	6.2	6	5.9	4.4	4.2	4.2	5.4	9.5	9.6	9.5	9.8
12	5.6	5.4	6	6	5.5	7	6.5	6	12.5	12.4	12.5	13
13	4.3	4.4	4	4.2	4.5	4	4.5	3.8	10.4	10.5	10.5	9.4
14	5	5	5	5.5	5.5	5.4	5	4.4	10	9.8	10	9.3
15	5.5	5	5.5	4.3	6	6.5	7	4.5	11	11.5	12	11
16	6.5	6.5	6.5	6.1	6.5	6	6.5	6.9	9.8	9.5	9.8	9.4
17	9	9	9	8.9	6.5	6.5	6.5	6.5	9	9.3	9	8.1
18	6.8	7	7	7.1	5.5	6	5.5	5.5	12	12.5	12	12.3
19	6	6	6	5	6	5	6.5	6.4	10	9.5	10.5	9.3
20	5.5	5.5	5.5	4.7	4.6	5	5	4.8	10	10	10	8.4
21	6	5.5	5.5	6	6.5	6	6.5	6.6	12.5	12.5	12.5	10.8
22	10	9	9	5.5	8	8.5	8	6.8	14	14.5	14.5	12.3
23	7	7	7	5.2	6	7	6	5.4	13.5	14	14	14.1
24	4	4	4	3.7	4.5	5	5	5.1	8	8.5	8	7.8
25	7.4	7	7.2	7	7	7.2	7.4	8.2	11	11.2	11	10.8

rience has been that in most cases the heart outline may be accurately determined. Repeated individual demonstrations have convinced me of this. In a study of fifty consecutive cases measurements obtained by palpation, percussion, and auscultatory percussion, have compared fairly with those obtained by x-ray study, as the table shows.

Palpation to determine the cardiac borders has in my hands become as accurate as percussion. My method is to use very light palpation for the left border, to start in the axilla and palpate medially, and for the right border to start, at least, 10 to 12 centimeters out and work medially. Reliance is placed on the difference in resistance of the underlying tissues. I have found this to be extremely valuable in general chest work, as well as heart work.

It is my practice to palpate, then percuss, and finally to use auscultatory percussion, taking separate measurements, avoiding the suggestive influence which one measurement affords by keep-

ing the eyes closed or turned away on making the subsequent examination. Inspection for the apex beat and finally palpation for the apex beat is then carried out.

The use of the tuning fork, I have found of doubtful value.

The measurements correspond fairly well, as the table shows, and for the most part a difference of more than a centimeter was rarely encountered.

PROGNOSIS

To render an intelligent prognosis in heart disease, one must of necessity make an accurate diagnosis. Etiological factors must be considered, as well as heredity, environment, occupation, age, sex, etc. Accompanying pathologic changes, for example, a cardiovascular-renal syndrome of necessity is of much more serious import than a similar cardiac lesion alone.

The time of recognition of the trouble and the nature of treatment have a marked bearing on

TABLE 2—*Showing Number of Cardiac Cases in Each Group*

	.2			.5 and below			1 and below			1.5 and below			2 and below			2.5			3			3.5			4.5		
	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.	B.	R.	L.
Pal.	15	13	10	12	13	14	11	11	9	6	9	1	3	2	7				3	2	1						1
Per.	14	13	17	13	12	10	13	11	8	3	8	5	5	4	7				2	1	1		1				
Aus. Per.	16	13	14	15	12	11	10	14	9	6	8	10	2		2			1	4	1	1	1					

prognosis. A notable example of this is in cardiac syphilis.

The individual with heart disease is, naturally, concerned as to how this will affect his life. While the presence of any cardiac abnormality acts as a constant hazard it is frequently compatible with longevity. A simple mitral insufficiency is a striking example.

Observation of many patients by both clinical and special study, notably electrocardiographic study, has brought out the serious nature of certain cardiac conditions and physical findings. Of patients with chronic endocarditis, those having mitral stenosis or aortic insufficiency, give a poor prognosis.

Acute bacterial endocarditis is invariably fatal within a few weeks, while subacute bacterial endocarditis is fatal within from three to twelve months.

A very high mortality occurs in patients with coronary disease and also in conditions involving the arterial system. Sudden cardiac deaths are frequently due to coronary thrombosis and at times to cardiac rupture.

Krumbhaar and Crowell¹² state that spontaneous rupture of the heart is chiefly an accident to the left ventricle of the aged. In the aged spontaneous rupture is practically always due to coronary thrombosis.

Much emphasis has always been attached to the condition of the myocardium, and rightly so, as the ability of the heart to function properly is governed by the myocardial reserve. Cardiac enlargement is the most accurate sign of myocardial involvement. Where the right border of the heart extends beyond 5 centimeters to the right or beyond 14 centimeters to the left of the midsternal line and is not due to displacement, and not of a recent origin, life expectancy beyond a few years is very unusual even though no other cardiac abnormalities be present.

Recurring evidence of decompensation also augurs for a serious outcome. Heart sounds which are distant and lack definition, as well as gallop rhythm, are associated with a marked degree of myocardial fatigue. Pulsus alterans is usually followed by death. White¹³ reports that nearly 100 per cent of his cases die within three years.

Auricular fibrillation is accompanied by a high mortality. Willius¹⁴ reports a mortality of 41 per cent at an average of fifteen months after examination in a group of 500 cases. Other serious cardiac conditions are auricular flutter, heart block, and frequently, paroxysmal tachycardia.

The electrocardiogram has been of inestimable value from a prognostic, as well as a diagnostic standpoint. Its great value is when it definitely shows abnormalities. The presence of a normal tracing very frequently does not exclude cardiac disease.

From a prognostic standpoint, of major importance is T-wave negativity in certain derivations

and aberrations of the Q. R. S. complexes, affecting all derivations.

Most of our success in the treatment of heart disease is dependent upon a proper interpretation of what has already been said. Etiological factors are of prime importance. The ideal always to be sought is prevention. This is, however, very frequently impossible. The disease once established is most effectively treated in its early stages. This is also frequently impossible.

EARLY PRESENTATION

A few words might be said regarding prevention. Periodic physical examinations cannot be emphasized too strongly. Investigations should be made into predisposition; evidence sought for associated disturbances such as nephritis, and hypertension; intensive and prolonged treatment given when the etiologic factor is syphilis; and all foci of infection regularly eliminated. Over-exercise, especially after middle age, carries a danger probably greater than underexercise. Excesses of overeating, or of mental stress and strain, which in themselves are probably productive of a toxemia, should all be avoided.

More prolonged absolute rest during and following acute illnesses is of vital importance even though no evidence of cardiac pathology be present.

Such seemingly trivial details as proper elimination and free fluid intake all contribute toward establishing a state of normality. Once established cardiac disease can often be cured providing a sufficient period of rest be instituted at the time of its onset. Any patient just developing cardiac disease, especially from an infectious disease such as rheumatic fever should, besides other measures, immediately be given the benefit of prolonged absolute rest in bed. Cases of long standing should be treated along similar lines. The smallest foci of infection should be eliminated, vaccines obtained from these foci should be administered in selected cases. Avoidance of excesses applies to an even greater extent. Absolute rest of from two to eight weeks twice a year, and oftener if indicated, should be enjoined before rather than after decompensation. A graduated regimen of return to normal activity should be followed. At least two to three weeks should be spent in the process, adding slightly to the gain of the proceeding until the patient has progressed from sitting up to walking.

THERAPY

The indication or contraindication for digitalis should be determined. Overdigitalization is productive of definite harm in many cases. Patients having heart block should not be given digitalis. Such symptoms as nausea and vomiting, coupling of the rhythm, decrease in pulse rate to 60 or below, call for a discontinuance of digitalis therapy for the time being. Generally speaking, too much reliance is placed on small doses of digitalis. Ten minim doses are inadequate for acute cases.

Strychnin and camphor are of questionable value. As an emergency stimulant oxygen is invaluable. Whisky has also a definite place in this

class of cases. Quinidin sulphate is of value in some cases of fibrillation, although productive of harm at times.

CONCLUSION

In conclusion I wish to re-emphasize the importance of thoroughness in our study of heart disease. All methods of examination should be encouraged. Laboratory and x-ray examinations are of great diagnostic aid when combined with our own examination. A comparison of heart measurements by palpation, percussion, and auscultatory percussion with x-ray examination of the heart shows these methods to be practically as accurate as x-ray. In view of this we should not discard clinical methods, but instead develop them to an even greater extent, combining the results with the results obtained by x-ray and laboratory, and thus establish a more reliable diagnosis on which to base subsequent treatment.

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DISCUSSION

HARRY SPIRO, M. D. (870 Market Street, San Francisco)—While one is listening to Doctor Mark's talk on "Interesting Phases of Cardiology," one cannot help but be struck with the interesting fact of how vast is our lack of knowledge on the subject of cardiology, how great is our inability to prognosticate with any degree of precision, and yet above all, what a wonderful organ the heart is, of how nature, when it formed the heart, tried to prepare for every possible emergency, and yet with all the wonderful reserve power of the heart, on what a very slender thread hangs life and death.

When we see or determine that the heart is enlarged we should be very careful before we make a diagnosis of a dilatation of the heart. We believe there is a vast difference between that heart which is hypertrophied, that is, in which the muscle is increased in amount, and the chambers also enlarged, and that condition of enlargement of the heart due to an overstretching—a thinning of the heart muscle and therefore an enlargement of the chambers. As a rule the heart stretches and contracts thoroughly,

thus maintaining an efficient circulation. If it is not emptying itself thoroughly because the muscle is overstretched, and one uses the term "dilatation" for that condition, "dilatation" then means just what its name implies, viz., a dilated heart. I believe we have a means of determining whether the heart is emptying itself properly or not even though it is increased in size, and that means is the judging of the amplitude of the heart's visible pulsatory waves during the fluoroscopic examination. If we see a very, very small wave and a large heart, we believe that this heart is dilated and not emptying itself thoroughly. This is of extreme importance, particularly in cases of auricular fibrillation.

Volumes could be written on the subject of the thyroid heart and still leave a great deal to be said. As Doctor Mark has stated, a systolic murmur is an extraordinarily frequent finding in patients who have a toxic goiter. When one listens to a heart of this type he will find practically every characteristic which one would expect to find in a patient who has a mitral valve defect. In our experience, from an ordinary physical examination it is practically impossible to separate that heart which has a mitral valve defect and thyroid disease, and the heart which has a systolic murmur without a mitral valve defect and thyroid disease. In a case of this sort an x-ray examination of the heart, if properly done, is of extreme importance. If you examine your patient in the left anterior oblique position fluoroscopically, or have pictures taken in this position, you can determine if the left auricle is enlarged or not. If the left auricle is enlarged that patient has a mitral valve defect. If the left auricle is not enlarged that patient has no mitral valve defect. This is irrespective of the murmurs which you hear, so that you have a means other than a post-mortem examination by which you can with a great degree of accuracy determine the nature of the abnormal sounds which you hear over the heart in thyroid cases. These thyroid toxicosis cases in which the auricles are fibrillating do remarkably well on quinidin, particularly so if the thyroid gland has been removed, the patient kept at rest after the operation and then placed upon properly regulated doses of quinidin. How the heart will regulate itself permanently is astonishing.

I look forward to reading and to listening to more on the subject of cardiology by Doctor Mark.

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JAMES F. CHURCHILL, M. D. (704 Electric Building, San Diego)—To my mind the most interesting work in internal medicine is the intensive study of patients with cardiac defects and the direction of such patients over a considerable period. The problem of the cardiopath is a broad one, including infection, rest, exercise, diet, elimination, occupation, finances, peace of mind and medication. The thought and attention given these cases is frequently rewarded by results which, if not brilliant, are well worth the effort.

In the usual heart case the goal is not to "cure" but rather to so direct the patient that he can live most comfortably and usefully with his defect. I find it is best to explain frankly to these patients why they are given certain directions and restrictions instead of having them blindly following orders. Intelligent cooperation on the part of the patient is of greatest importance in heart disease.

I am interested in Doctor Mark's table comparing the means of determining the heart borders, especially since it so closely tallies with my own experience. Practically I find it necessary to resort to x-ray assistance only in those individuals with thick chests heavily overlaid with fat. This applies especially to women with very large breasts. Ordinarily if one is painstaking he will not be far wrong on percussion.

Another point which cannot be emphasized too much is the value of prolonged rest in cardiac infections. It is often difficult to continue this as long as

may seem desirable, but here again frank discussion of the reasons will remove many of the objections of the patient or the family. In children especially the degree of restoration of the heart integrity by prolonged rest is truly remarkable, and it is often possible to transform what is apparently a seriously handicapped heart invalid into an active, useful individual.

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DONALD JACKSON FRICK, M. D. (1136 West Sixth Street, Los Angeles)—It is to be hoped that the newly awakened interest in heart disease will lead to an approximation of the success reached in the handling of tuberculosis as a public health problem. The difficulty, as Doctor Mark has shown lies principally in the fact that in heart disease the etiological factors are multifold while in tuberculosis we have a definite causative organism. Abscessed teeth, as a source of infection, should be included in a discussion of etiology.

It is always difficult to review a problem as extensive as Doctor Mark's without becoming dogmatic. For instance, the statement that all hypertrophied hearts are also dilated is difficult to accept without qualifications.

One cannot help but agree heartily with Doctor Mark that the x-ray is a most valuable adjunct in cardiac study, and must feel that no case is carefully or completely studied until an orthodiagram has been made. It gives much information which cannot otherwise be gained, and in doubtful cases often fixes a diagnosis. It is not only in cardiac area alone but in study of so-called heart tone, in delineation of the heart outline, and investigation of the encroachment upon the posterior mediastinal space and changes in the aorta, that we find the fluoroscopic study of the heart of the greatest assistance. The addition of a new method of study does not of necessity replace the older methods, but should widen our conception of the conditions under investigation.

Our hope for the future undoubtedly lies in prevention of those conditions which result in heart damage. In treatment of persons already presenting heart involvement, we must rely principally on rest and re-education.

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AUTHOR (closing)—It is a debatable point whether or not a certain degree of dilatation always accompanies cardiac hypertrophy.

X-ray and fluoroscopic examination of the heart are of inestimable value and should whenever possible supplement the physical examination. I am very pleased to note that this has been emphasized by Doctors Frick and Spiro. Personally I have been very hesitant about making a diagnosis of valvular defects on the basis of fluoroscopic studies. I cannot agree with Doctor Spiro regarding the difficulty of differentiating between the systolic murmur associated with exophthalmic goiter and that due to mitral insufficiency. The systolic murmur accompanying hyperthyroidism usually has its maximum intensity in the pulmonic area and is then easily differentiated from the systolic murmur of mitral insufficiency, which is of maximum intensity at the apex and with definite transmission to the axilla.

As brought out by Doctor Churchill, one experiences greater difficulty in determining the heart borders in the stout man and in women with large breasts. However, by the combined use of palpation, percussion, and auscultatory percussion, and when possible, x-ray, the margin of error is cut to a minimum.

I am very pleased that all the discussers have laid particular emphasis on prolonged rest, which is in absolute accord with my views as brought out in my paper.

THE LURE OF MEDICAL HISTORY*

JOHN HUNTER

With His Own Graphic Account of His Attack
of Coronary Occlusion in 1773

On the Second Centenary of His Birth

By FREDERICK LEET REICHERT, M. D.

San Francisco

IN the history of medicine the figure of John Hunter, younger brother of William Hunter, dominates the eighteenth century. He may in reality be acclaimed as the father of scientific surgery, since he initiated those developments in surgery which led in the two centuries just past to the gradual replacement of empiricism by the application of anatomical, physiological and pathological knowledge. His fame lifted him well above the ranks of his profession, and he was regarded by Billroth, that master genius of German surgery, as one of the greatest men the English nation has produced. His birth is recorded in the parish register of Kilbride, near Glasgow, as of February 13, 1728, just two hundred years ago, and he died in London in 1793.

MAJOR ACHIEVEMENTS OF JOHN HUNTER

We pay tribute to John Hunter daily in our recognition of his great contributions to medical science. Among them are his accurate descriptions of the natural history and diseases of the teeth, the exact mode of the descent of the testis, the cause of inflammation in veins, the introduction of the stomach tube as a means of administering food and medicine, the Hunterian operation for the cure of aneurysm, the efficiency of mercury in the treatment of syphilis, the circulation of the placenta studied in collaboration with his brother William, a treatment for ruptured tendons, the mode of growth of bones, the treatment of gunshot wounds, and finally, as the greatest contribution of all, his museum, now in the Royal College of Surgeons, London.

JOHN AND WILLIAM HUNTER

At the age of twenty John Hunter came to the school of his brother William in London as a voluntary helper, and within a year became an assistant in this famous group of anatomists. Here he readily learned the fundamentals of anatomical investigation from his brother, and he soon began independent researches in comparative anatomy. "He saw the meaning of science more clearly than any man who had lived, and he had the genius to make others see that meaning."

This paper is not concerned with the unfortunate controversy that separated these brothers, nor with the younger man's impetuous and petty quarrels. A tribute is due his tireless energy in revealing the truths that awaited him in the animal and vegetable world, not only in anatomy and physiology, but also in the new field of pathology. He was an alert and inspiring teacher, a master mind, reflected in such illustrious pupils as Edward Jenner, Sir Astley Cooper, John Abernethy, William Clift, James Parkinson, Sir William Blizard, Sir Evarard Home, Edward Alanson, Wright Post of New York, and Phillip

* From the Department of Surgery, Stanford University Medical School.

Syng Physick of Philadelphia, the last named the father of surgery in America.

SPECIAL STUDIES BY JOHN HUNTER

His strenuous life of over sixty years contained many interesting events, such as the experimental inoculation of himself with gonorrhea and syphilis to afford an accurate study of the course of the disease and the effects of treatment.

During the study of heat in animals he had hopes at one time of indefinitely prolonging life by means of human hibernation. He speculated thus: "If a man would give up the last ten years of his life to this alternate oblivion and action, I might prolong it for a thousand years by thawing him every hundredth anniversary, when he might learn what had happened during his frozen condition, being thawed to precisely the same condition at which I froze him."

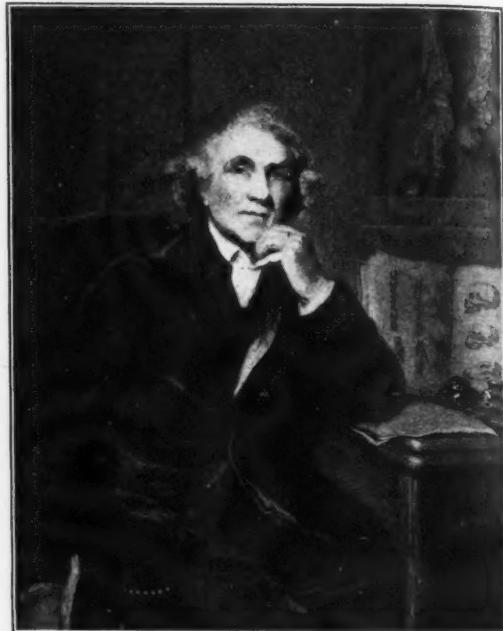
In his successful treatment of aneurysm, he applied the observations which he obtained after ligating the carotid artery of a deer in Richmond Park. In the first few days the antler seemed to wither, but after a week he found it warm and viable. When he dissected the head of the animal he discovered that anastomotic vessels furnished sufficient blood supply to keep the antler alive. Thus by experimentation came the principle that when the main artery to a part is ligated, collateral vessels by anastomosis provide adequate nourishment. Within a few months he applied this theory in the successful cure of a popliteal aneurysm.

In his eagerness to secure the skeleton of the Irish giant, O'Brien, who was seven feet seven inches tall, he was forced to pay five hundred pounds to the undertaker and his hirelings before they would release the body. The lower extremities of this famous skeleton are illustrated in the painting of Hunter by Sir Joshua Reynolds.

JOHN HUNTER'S STUDY OF CORONARY OCCLUSION

Today, because of our more exact knowledge of coronary occlusion, we find of more than passing interest the account of Hunter's illness, which covered the last twenty years of his life. Some of the symptoms he himself recorded, others were dictated to his brother-in-law and associate, Sir Evarard Home. We now recognize that instead of having repeated attacks of angina pectoris, as his pupil Jenner suspected, he suffered from coronary occlusion, as well as angina pectoris and cerebral arteriosclerosis. Heberden, a contemporary of Hunter, in 1768 first used the expression "angina pectoris," although Morgagni in 1743 observed the ossification of the coronary arteries which he correlated with the patient's symptoms.

Hunter's classical and graphic description of an attack of coronary occlusion which assailed him in the spring of 1773 deserves to be quoted in full. Sir Evarard Home records it as follows: "Having met with something which very forcibly affected his mind, he was attacked at 10 o'clock in the forenoon with a pain in the stomach, about the pylorus; it was the sensation peculiar to those parts, and became so violent that he tried change of position to procure ease; he sat down, then walked, laid himself down on the carpet, then



JOHN HUNTER

upon chairs, but could find no relief. He took a spoonful of tincture of rhubarb with thirty drops of laudanum, without the slightest benefit. While he was walking about the room, he cast his eyes on the looking-glass, and observed his countenance to be pale, his lips white, giving the appearance of a dead man; this alarmed him, and led him to feel for his pulse; but he found none in either arm. Several physicians of his acquaintance were then sent for: Dr. William Hunter, Sir George Baker, Dr. Hugh Saunders, and Sir William Fordyce. All came, but could find no pulse; the pain still continued, and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing, by working his lungs by the power of the will; the sensitive principle, with all its effects on the machine not being in the least affected by the complaint. In this state he continued for three-quarters of an hour, in which time frequent attempts were made to feel the pulse, but in vain; however, at last, the pain lessened, and the pulse returned, although at first but faintly, and the involuntary breathing began to take place. While in this state, he took Madeira, brandy, ginger, etc., but did not believe them of any service, as the return of health was very gradual; in two hours he was perfectly recovered."

The next illness of importance came about three years later, and appears to have been an "inflammation in the arteries of the brain," accompanied by the feeling of being suspended in the air, and by the sensation that the room was going around. On its subsidence he vomited and felt relieved. These symptoms recurred the following day with the sensations of sight, hearing, smell, and taste extremely acute or heightened. "His pulse was generally about sixty, and weak, and a small degree of heat on the skin, especially on the hands

and feet. He remained in this state about ten days." The ataxia persisted during the convalescent period.

In 1785 an attack of gout ushered in the third serious illness and was followed by "a sensation of the muscles of the nose being in action, attended with an unpleasant sensation in the left side of the face, lower jaw, throat, . . . and down the left arm as low as the ball of the thumb. . . . After these had continued for a fortnight, they extended to the sternum . . . , giving the feel of the sternum being drawn backwards toward the spine, as well as that of oppression in breathing; . . . at these times the heart seemed to miss a stroke; and upon feeling the pulse the artery was very much contracted, often hardly to be felt. . . . He was next seized with a pain in the region of the heart itself; and last of all, with a sensation in the left side, nearly in the seat of the great end of the stomach, attended with considerable eructations of wind from the viscera." Several weeks later the most violent attack came which quite exhausted him and he sank into a swoon or doze to awake with confusion in his head which went off in a few days.

In December, 1789, he suffered a total loss of memory with complete recovery within a half hour. This was followed in two weeks by giddiness and ataxia. "Objects had lost their true direction; a perpendicular, for instance, seemed to lean to the left—and objects were also smaller than the natural recollection of them—and appeared to be at an unusual distance. . . . His recovery from this indisposition was less perfect than from any of the others; he never lost entirely the oblique vision; his memory was, in some respects, evidently impaired, and the spasms became more constant; he never went to bed without their being brought on by the act of undressing himself The least exertion in conversation after dinner was attended by them."

An attack in October, 1792, was so violent that Home thought he would not live. The final attack which caused his instant death occurred at St. George's Hospital on October 16, 1793, when Hunter, angered at a meeting, restrained his feelings and left the room to drop over dead.

AUTOPSY FINDINGS

The postmortem was made by Evarard Home, who states that the gastro-intestinal tract was normal and that the gall bladder contained five or six yellow stones. The right lung was clear, but there were strong adhesions to the pleura of the left lung. The pericardium was unusually thickened, but no abnormal fluid was present.

"The heart itself was very small, appearing too little for the cavity in which it lay, and did not give the idea of its being the effect of an unusual degree of contraction, but more of its having shrunk in its size. Upon the under surface of the left auricle and ventricle, there were two spaces, nearly an inch and a half square, which were of a white color, with an opaque appearance, and entirely distinct from the general surface of the heart; these two spaces were covered by an exudation of coagulating lymph, which at some former period had been the result of inflammation there. The muscular structure of the heart was paler and looser in its texture than the other muscles of the

body. . . . The coronary arteries had their branches which ramify through the substance of the heart in the state of bony tubes, which were with difficulty divided by the knife, and their transverse sections did not collapse, but remained open. The valvulae mitrales, where they come off from the lower edge of the auricle, were in many places ossified. . . . The semilunar valves of the aorta had lost their natural pliancy, the previous stage to becoming bone. . . .

"The aorta, immediately beyond the semilunar valves, had its cavity larger than usual, putting on the appearance of an incipient aneurysm; this unusual dilatation extended for some way along the ascending aorta, but did not reach so far as the common trunk of the axillary and carotid artery. The increase of capacity of the artery might be about one-third of its natural area; and the internal membrane of this part had lost entirely the natural polish, and was studded over with opaque white spots, raised higher than the general surface. . . .

"The internal structure of the brain was very carefully examined, and the different parts both of the cerebrum and cerebellum were found in the most natural and healthy state; but the internal carotid arteries, as they pass by the sides of the sella turcica, were ossified, and several of the ramifications which go off from them had become opaque and unhealthy in their appearance. The vertebral arteries lying upon the medulla oblongata had also become bony, and the basilar artery, which is formed by them, had opaque white spots very generally along its coats."

ADAMS' DEDUCTIONS

Joseph Adams, in his memoirs of John Hunter, published in 1817, was apparently the first to compare the morbid appearances in the various organs with the symptoms during life. He rightly felt that the opaque spots on the heart probably resulted from the severe illness of 1773, believing "that the heart refused to act, the invariably immediate consequence of high inflammation in a muscle," which today we would interpret as due to coronary occlusion.

The symptoms of 1776 Adams states are readily explained by the appearance within the cavity of the cranium where "the arteries of the brain suffered high inflammation."

During the severe paroxysms of 1785 he felt that "probably calculous deposition took place in the aorta. . . ."

"The symptoms of 1789 were probably the effect of a slighter degree of inflammation about the substance of the brain, or of some irregularity in its supply of blood from the condition of the arteries. . . ."

We must remember that Adams' deductions were made many decades before the functions of the brain had been localized.

John Hunter's remains were interred in the parish church of St. Martins in the Fields and some fifty years later were removed to Westminster Abbey.

"Hunter was a profound philosopher, a great naturalist, a pre-eminent collector, and a foremost surgeon of his time. It was to make surgery more perfect that all his works subserve, and in it to reach the highest rank. He rendered to this art of science greater service than had been done before him, and his fame came to us not merely on what he did, but on what he suggested might be done." (Sir William McCormac, Hunterian Oration, 1899.)

Stanford University School of Medicine.

CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

HEMOCHROMATOSIS IN A JAPANESE

CASE REPORT

By GARNETT CHENEY, M.D.

San Francisco

HEMOCHROMATOSIS, or Bronze diabetes, has been described as cirrhosis of the liver, plus pigmentation of the skin, plus diabetes, the last usually occurring in the later stages, but not necessarily present. Less than one hundred cases have been reported in the literature, and only three in Japanese. The positive clinical diagnosis is based on the demonstration of hemosiderin in a piece of excised skin; the pathological diagnosis on the presence of the two characteristic pigments, hemosiderin and hemofuscin, in the liver, pancreas and other organs. This case did not have diabetes, but the pathological findings fulfilled the criteria for diagnosis required by Dr. F. B. Mallory. Clinically the diagnosis of hemochromatosis was suggested after the unusual pigmentation was noted.

CASE REPORT

Mr. D. S. Y., a 35-year-old Japanese teacher of English first came under the medical observation of Dr. W. F. Cheney in 1911 complaining of stomach trouble. I am indebted to him for the history up until 1927. The family history and marital history were not unusual. The patient had dysentery in Japan in 1902. He did not drink and there was no history of exposure to copper. He came for treatment of sour stomach, constipation, headaches and protruding hemorrhoids, and also stated that he had the habit of rumination. His appetite was good and he could swallow a "gallon of food at a time," and bring up any amount of it up to several hours after ingestion. He had been on a restricted diet and losing weight for two years. Physical examination showed him to be small, pale and poorly nourished, but there were no abnormalities of eyes, throat, neck, heart, lungs, abdomen, reflexes or skin. The stomach outline after inflation with carbon dioxide indicated dilatation. The urine was negative. A single extraction Ewald test-meal analysis revealed a total gastric acidity of 12 degrees, with no free HCl. He was put on treatment for chronic gastritis and achlorhydria which included elixir of lactopeptin which contains 18 per cent alcohol, and hemaboloids which contain 17 per cent alcohol. He improved.

He continued his medicine for nine years when he returned with the same symptoms as before which had grown worse after influenza one month previously. He had had several minor operations for bleeding hemorrhoids. He weighed less and his abdomen was somewhat tender to palpation. The gastric test meal showed 4 degrees total acidity and no free HCl. Treatment was continued and he got on fairly well for two years, but in March, 1922, he entered the hospital for removal of hemorrhoids, which was done. At that time his urine and stools showed nothing unusual, and the Wassermann reaction was negative. The blood count was 3,470,000 red blood cells and 3,250 white blood cells. The hemoglobin was 67 per cent. A fractional gastric test meal showed no free HCl in any of the specimens and a very low total acidity. An x-ray of the gastro-intestinal tract was reported normal except for adhesions about the cecum. Just three

years later he again sought medical advice, as he had been vomiting small amounts of bright blood. The physical examination was the same as previously, but the stool was strongly positive for occult blood. The blood count showed a moderate anemia with 5000 white blood cells and normal differential count. A gastro-intestinal x-ray examination did not reveal an ulcer or neoplasm and fluoroscopy of the chest was negative. In view of the hematemesis, cirrhosis of the liver was suspected although the organ seemed normal to physical examination, and the only history of alcoholic intake was that contained in the medicine prescribed.

In October, 1926, he first noted swelling of the legs, and examination showed a very large, smooth, tender liver, edema of the legs, but no signs of ascites. He had only 60 per cent hemoglobin and 2,510,000 red blood cells. A differential white blood count showed 55 per cent mononuclear cells. After three months the edema had increased involving the genitalia and there were signs of moderate ascites, but no distended veins over the abdomen. A gastro-intestinal x-ray series and a barium enema were negative. A flat plate of the abdomen showed an upper abdominal shadow interpreted as due to an enlarged liver. His blood had improved. A month afterward he became semiconscious and was sent to the hospital in January, 1927, where he died three days later. Examination while in the hospital showed an intense chestnut-brown pigmentation of a dry scaly skin, especially over the neck, lower abdomen and shins, and about the mammary glands, genitalia, and anus. Irregular pigmentation over the chest gave it a pronounced speckled appearance. He was emaciated and dehydrated and the sclerae and mucous membranes were icteric. There were many external hemorrhoids about the anus. The blood pressure was 120 systolic, 70 diastolic. Fifteen hundred and sixty cc. of abdominal ascitic fluid was removed, but neither the liver edge nor the spleen could be felt. The blood count was 2,380,000 red blood cells, 13,900 white blood cells with 86 per cent polymorphonuclear leukocytes. The hemoglobin was 68 per cent, giving a color index of 1.4. The urine was negative for sugar, but showed a faint trace of albumin with numerous hyaline casts. The blood Wassermann was negative, the blood sugar was 50 mgs. per 100 cc. of blood, the blood urea was 61.5 mgs. per 100 cc. of blood. The direct Van den Bergh reaction was strongly positive in three minutes, the indirect equaled 25 units. The icterus index was 80. The ascitic fluid was turbid, orange colored, and the specific gravity was 1018. The albumin was 4.5 grams per liter. The cells were 78 per cent polymorphonuclear leukocytes and 22 per cent mononuclears. On the third day he developed râles at both lung bases and suddenly expired.

A complete autopsy was performed. The anatomical diagnosis was hemochromatosis, chronic atrophic cirrhosis of the liver, chronic gastritis with multiple polyps of the stomach, terminal bronchopneumonia and embolism of the right pulmonary artery with infarction of the lower lobe of the right lung. The liver was very small and nodular and on cut surface and routine microscopic examination had the characteristics of the type of cirrhosis described by Laennec. The pancreas and adrenals did not show any unusual sclerosis. Microscopic sections stained for hemosiderin and hemofuscin showed large amounts of hemosiderin present in the liver and pancreas with smaller amounts in other organs. It was demonstrated in the zona glomerulosa of the adrenals. Mallory regards this finding as pathognomonic of hemochromatosis. This pigment was also present in small quantities in the coil glands of the skin from the lower leg. Hemofuscin was present in small amounts in the liver and pancreas, but was abundant in the muscularis mucosae of the stomach. Elsewhere it was present in very small amounts.

Shreve Building.

ACRODYNIA

CASE REPORT

By RIETA CAMPBELL HOUGH, M. D.
San Diego

STIMULATED by the case report of Dr. J. W. Robinson in the June number of CALIFORNIA AND WESTERN MEDICINE, I am reporting the following cases of acrodynia to impress upon the profession that they are of more frequent occurrence than is thought; and that the diagnosis is frequently missed.

CASE I—R. B., male child, age fourteen months, first seen by me April 22, 1927, with the following history: Up to February had never been ill and had passed a "perfect first year," weighing twenty-one pounds and twelve ounces on his first birthday. In February, anorexia and listlessness appeared. These grew progressively worse and soon an intractable stomatitis appeared. The child's condition grew steadily worse until when brought in he had the following symptomatology: extreme irritability (he was in the reception room about twenty minutes before admission and I could hear a constant wailing), disturbed sleep—the child slept in the knee-chest position and would waken four to five times a night, howling; extreme constipation; marked drowsiness and apathy if not disturbed; loss of use of his legs; low grade temperature of ten days' duration, 100.4 highest; anorexia—taking about six to eight ounces of milk daily; cold, clammy hands and feet.

When undressed and put on the examining table near a window the child immediately flexed thighs on abdomen and put his hands over his eyes—hypotonia and photophobia; his weakness was extreme, for he could not stand on his legs; his body showed scratches indicating a pruritus; muscle tone nil; his mouth showed an ulcerative stomatitis though the teeth were intact; his hands, wrists, feet, and ankles were purplish red and clammy, with rather a clear line of demarcation.

The child's diet had been prescribed as follows: daily one quart of milk mixed with Roman meal gruel; and cod-liver oil, one teaspoonful twice a day.

There is a great deal of discussion as to the etiology of acrodynia, some observers believing it of dietary origin, and others favoring an infectious causation. My personal belief is that it is a deficiency disease and belongs in the same class with rickets, pellagra, and beri-beri. Holding to this viewpoint I strive to arrange a diet and treatment which will meet any possible deficiency.

The daily diet I prescribe is as follows:

Butter, two tablespoonsfuls.

One egg-yolk, at least.

Two to three tablespoonsfuls of beef juice pressed from seared round steak, very rare.

Four ounces of tomato juice.

No milk (following Porter).

Sun bath, increasing time of exposure as rapidly as possible.

Cod-liver oil is omitted temporarily until the appetite is improved and then started.

If possible, give in addition plenty of vegetables, orange juice, and raw cabbage juice.

The child would not eat all I felt necessary and as he had a marked secondary anemia he was given 2 cc. iron cacodylate (Roger) intramuscularly twice a week. The child showed marked improvement after this, appetite picking up, and a progressive though slow gain being made. His hands and feet never reached the vesicular desquamating stage, and he never lost an ounce after the treatment was started. His initial weight was nineteen pounds and eleven ounces; at the

end of June his weight was twenty-two pounds and four ounces. At this time he was walking and apparently recovered. On July 12 the child developed pertussis, but went through the attack with no difficulty; on September 6, weighing twenty-four pounds and four ounces. He is bright, active and happy, and apparently normal in every respect.

CASE II—The second case was an advanced case of acrodynia in a 17 months old boy. The diet that this patient had received consisted of one and one-half quarts of milk that had been boiled three minutes. The same change was made in his diet, and in two weeks he had made remarkable progress.

In these patients it is possible that treatment may be commenced at the turning point of the disease and that the patient might have recovered without a change in treatment.

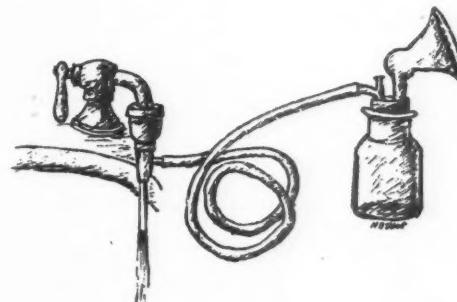
726 Electric Building.

A SYPHON BREAST PUMP

By HARRY S. FIST, M. D.
Los Angeles

THE mechanical breast pump is a boon to obstetricians and should be more generally used. Expense and bulkiness have heretofore prevented.

The water suction apparatus is not new, but has been used for some time by several men. It is efficient, yet so small and inexpensive that it can be universally used. It consists of a suction pump as used in laboratory practice, a breast cup with collection bottle as used with the electric pump, and a device for releasing pressure. With suction pumps of this kind, pressure has been controlled by pinching off a rubber tube while suction is desired, and releasing it to discontinue the suction. Patients using it have complained of tiring of the fingers from holding the rubber tube. The apparatus here illustrated utilizes also a T tube, but no rubber tubing, using instead an opening which is easily closed by placing over it the finger tip.



To empty the breast, suction is maintained until the flow of milk stops; suction then is released and reapplied. By using a long rubber tube (the heavy variety used for stethoscopes) the pump may be attached, if necessary, to a faucet twenty or more feet from the bed.

The shape of breast cup here illustrated, with the bulb at the center, eliminates pressure on the nipple, thus facilitating free milk flow. It is sold

by Pilling and Son. The pump and tubing are obtainable at practically any instrument house.

While the author does not claim any originality, this device is of so much value in developing a milk supply and involves so little expense, that he feels it should be more generally known to the profession.

2007 Wilshire Boulevard.

SENIILE CATARACT*

REPORT OF CASES

By PELEG B. WING, M. D.
San Diego

SINCE I first operated on cataract in Tacoma, Washington, in 1889, I have used the combined method. In only a few cases have I done the simple operation, only three in capsule. This report is on forty consecutive cataract operations done at Mercy Hospital, San Diego.

Never have I dislocated a lens into the vitreous and never but once used the wire loop, and that was a case with old adhesion of the iris. For a period of eighteen years I did not as a rule use a speculum and did not do a preliminary iridectomy.

Since coming to San Diego in 1919 I have found the majority of patients more restless and nervous than in the north. I do not know why, unless it is the climate. However, I have never had a case of mania following the operation here, which sequel occurs about once in every two hundred to three hundred cases, while in Tacoma I had four such cases. Here I give the nervous patient $\frac{1}{4}$ grain morphin and 1/150 of scopolamin forty-five minutes before operation. I have never seen any bad symptoms from its use and it controls the patient.

I have made it a practice to do a preliminary iridectomy. It educates the patient and accustoms him to hospital usage. After two days in the hospital for the iridectomy an interval of three weeks elapses between the iridectomy and the cataract operation. I use a speculum for this work and make a small incision in the clear corneal margin. When the extraction is done the iris is not touched except to replace the corners and there is no pain to cause the patient to squeeze the eye. I use a sharp needle like the pointed cystotome designed by the late Prof. Francis Valk and lacerate the capsule in a circular manner so a large portion of the anterior capsule is removed with the lens—all soft lens matter is gently removed as far as possible. A piece of moist gauze is applied, then cotton, then another layer of gauze over both eyes is fastened by adhesive strips. The moist gauze adapts itself to the curvature of the eye and holds the lids steady. Pressure in the dressing is to be avoided.

As a shield I use a home-made affair that is comfortable and efficient. I take the fiber cover of some small notebook, cut out a circular oblong large enough to cover the eye, cut from the edge to center, make a central opening about one-quarter

inch, then lap and glue the cut edges which makes a flat cone-shaped light rigid protector. The central hole is sufficient for ventilation.

A word as to the preparation of the patient:

Have the patient take a cathartic the night before he enters the hospital. The following day when he enters the hospital his diet is light. On the morning of the operation he has an enema. With such preparation he will not be disturbed on the day of the operation and can rest for two or three days without a movement. A laxative like cascara followed by an enema can then be given. Patients who cannot easily use a bed pan are allowed to get from the bed to a chair at the bedside, often with less exertion and better results.

Preparation of the Eye—Look carefully for traces of pus from the tear sac and never operate when present until the condition is cured or the sac has been removed. Carefully examine the secretion from the eye, if any.

Cleansing the Eye—After the application of cocaine 5 per cent, two or three times, the eyelids and face are carefully washed with soap and water, the eyebrows clipped if at all long, the edges of the lids carefully cleansed, and a 10 per cent argyrol solution freshly prepared is dropped in the eye and allowed to remain about five minutes. Then the eye is doused with boric solution, lids everted and upper and lower cul de sac irrigated. The argyrol coagulates all secretion which is easily removed leaving a cleaner field than scrubbing, with minimum irritation. Cocaine is used for five or six times before operation.

The operation is then performed, an assistant holding the lids apart with his fingers wrapped in a layer of gauze to prevent slipping. The hand rests on the brow and forehead and so controls the muscles, and is preferable to any hook or retractor. I operate without gloves, but both myself and assistant wear masks.

The incision is made deeper than the one for the iridectomy. I am not in favor of a large conjunctival flap, as I believe it tends to close the wound superficially and to cause the rapidly reformed and confined aqueous to separate the edges of the corneal incision, thereby causing a slower and more irregular healing and a greater degree of astigmatism. Neither am I in favor of sutures. As little manipulation as possible is my motto.

After Treatment—After treatment is as important as the operation. I change the dressing after twenty-four hours, but do not open the eye unless symptoms demand it. Carefully cleanse the edges of the lids, apply borated vaseline and clean dressing. This is done every twenty-four hours. At the third dressing the lower lid is depressed and a 1 per cent solution of atropin is instilled. This is repeated at each dressing. If all goes well, the unoperated eye is left uncovered on the fourth day and the patient allowed to sit up either on bed or in a chair by the bedside. The operated eye is covered for eight days, then uncovered during the day, when pale-smoked glasses and an eyeshade are worn. If all is quiet there is no necessity for examining the wound or disturbing the eye more than as outlined above. I allow patients to go

* Read before the medical staff of Mercy Hospital, San Diego, March 15, 1927.

home in twelve to fourteen days provided they reside in the city where I can see them occasionally and if good care is assured.

The appended table lists the results obtained in the last forty cases operated in Mercy Hospital, covering two and one-half years' work:

Two cases lost by iridocyclitis.

One case, following an iridocyclitis, has 20/200 distant vision; can read coarse print.

One case died from cerebral hemorrhage before the eye recovered.

Of the remaining thirty-six fairly satisfactory results were obtained in each case.

One case has 20/70 vision, which can be much improved by discussion of capsule.

One case, 20/50, which also can be improved by discussion.

Two cases, 20/40, subject to improvement in the same way.

Thirty-two cases have 20/30; discussion has been done in five cases, two for simple capsule, two for iridocyclitis, all getting 20/20 vision; one will bear further description.

Patient: Male, age 64 years. Right lens ripe, left—partial on June 15, 1925. I operated on right eye. Patient discharged from hospital in twelve days, eye quiet, very little congestion. At end of three weeks patient reported to the office. Vision with approximate correction was 20/20 and J No. 1, easily. As I was going to take a short vacation he was told to keep quiet, make no exertion, in all ways to "let his moderation be known to all men." Three or four days later he mowed his lawn, dug around his rose bushes and garden and went to the beach, surf bathing. The eye became inflamed. Not knowing where I had gone he consulted another oculist who thought it nothing serious. Next day or two pain became severe, atropia was used. Another oculist was called and a general practitioner to see if there was any central origin of the trouble. I was sent for and found patient in severe pain, and anterior chamber filled with blood, perception of light only. He was treated with atropin and dionin. Hot fomentation and injections of goat's milk which, by the way, produced no reaction. The pain and inflammation slowly subsided. The cataract slowly progressed in left eye. Eleven months from the time of the extraction the pupil of right eye was drawn up and occluded, or nearly so, there was one small spot where I could get a red reflex. Perception and projection of light was good. I did a transverse iridotomy, aiming to cut the iris across the part of greatest tension. Owing to the stretching of iris the pupil was not exactly central, but extended rather to the nasal side. The eye was not examined for four or five days, when, much to my disappointment, I got no red reflex. The new pupil was dark and no sight, perception of light remained. When I operated there was no hemorrhage into the anterior chamber, just a clean cut.

Four or five days after, the patient came into the office and said, "That cloud has broken up and I can see between the clouds." Ophthalmoscope showed a mass of floating bodies like pieces of paper in the anterior vitreous. They gradually

cleared under atropia and dionin, until today there is scarcely a trace. This was doubtless caused by a hemorrhage into the anterior vitreous. In August he made a trip East, wearing temporary glasses. Upon his return on November 24, 1926, I gave the permanent correction, which was:

Plus 10 sph., with plus 3 cyl. axis 120, for distance, and a plus 14 sph., with plus 3 cyl. axis 120 for reading.

Now comes the surprising part. He read without hesitation, 20/10—the 10-foot line at 20 feet, and of course his near vision is perfect. December 1, I operated on the left eye. He left the hospital December 12.

Today, March 1, he has 20/10 in right eye and 20/20 + in the left, and is doing very fine work without difficulty and says he sees better than he ever did.

520 E Street.

The Cancer Campaign—A two weeks' intensive campaign of popular education regarding cancer was inaugurated in the New York Academy of Medicine, November 22, at a meeting of prominent medical men. The important measure that was undertaken was the preparation of brief articles on cancer to be published in the New York City daily newspapers. How nobly the newspapers responded is shown by the following letter from Dr. J. C. A. Gerster, the chairman of the New York City Cancer Committee, published in the *New York Herald Tribune* of December 14:

"The work of the *Herald Tribune* and of other New York newspapers in the cancer campaign now drawing to a close is almost without precedent in the history of public health education, and its significance should be called to the attention of your readers.

"The newspapers have long been recognized as among our greatest educational institutions. Health education is a comparatively recent journalistic venture. It has come to stay. The public probably seeks medical advice from the newspapers as eagerly as from the medical fraternity itself. The cooperation established between two such forces as the press and the American Society for the Control of Cancer is a milestone worth noting—an amazing contribution to the cause of public education. In seventeen New York City newspapers on twenty consecutive days 205 individual stories about cancer appeared, covering 2118 inches of space, or 100 newspaper columns. Moreover, following your lead, 114 newspapers throughout the country also carried the message.

"From authentic sources I learn that there are now in our New York hospitals patients who applied directly because of what they read, were found to have early cancers and now possess the best chances of escape.

"In the name of these fortunates and in the name of the New York City Committee of the American Society for the Control of Cancer, accept our gratitude and thanks for your great contribution toward the relief of suffering humanity."—*New York State J Med.*

Cooperation in Work for Boys and Girls, New York City—Twenty-five of the eighty-eight social agencies caring for New York City's dependent children have organized as a section of the Welfare Council of New York in order to coordinate their activities and eliminate needless duplication of work. All existing agencies will be invited to send delegates to the council.

The Welfare Council is now making a study of boys' work activities in Brooklyn, preliminary to a similar study for New York City as a whole. When completed it is intended that this study shall present an accurate picture of facilities for social work among New York's half-million boys.—United States Department of Labor.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

MANAGEMENT OF THE PATIENT WHO HAS BEEN UNDER PROLONGED TREATMENT WITH ARSPHENAMIN AND BISMUTH, AND IS STILL FOUR PLUS

Harry E. Alderson, San Francisco—This subject is so broad in its scope that it cannot be discussed fully in a "Bedside Medicine" article, but a few general suggestions that may be of assistance are offered. In the first place it should be strongly emphasized that no syphilitic should be so neglected in the early part of his treatment that he reaches the so-called Wassermann-fast condition. Failure to treat properly in the beginning of the disease may be due to the patient's carelessness or lack of cooperation from other causes (ignorance, cultism, or poor advice) or to inefficiency on the part of the medical attendant. For fifteen years we have been giving all syphilitics printed information explaining the nature of syphilis, its complications, and the prime importance of early and continuous treatment. This has been of very great assistance in keeping these patients under treatment and proper supervision.

Sometimes too much attention is paid to specific medication, concentrating on the spirochetes rather than the patient. Routine treatment is important, of course. The individual should never be overlooked and every effort should be made to build up his resistance from the very onset of the infection. Probably in many cases arsenic-resistant spirochetes are produced through giving arsphenamin in too small doses or at too great intervals. These remarks are occasioned by the fact that too many old syphilitics come to us with every evidence of having had inadequate early treatment. Prompt early treatment by specific drugs judiciously administered and proper diet, exercise, fresh air, and physiotherapy will secure complete early eradication of the disease.

In these old cases we have to depend a great deal upon auxiliary measures. Through the various agents of physiotherapy we aim to build up the patient's general health. This treatment naturally has to be modified to suit the case. In our efforts in this direction we should remove every disturbing factor. For example, eradication of definite foci of infection is called for. We occasionally observe very marked serological improvement to follow combined eradication of streptococcal foci and arsphenamin injections. It may be that this surgical procedure produces an effect like that caused by shock from foreign protein injections. Temperature elevation produced by protein or malaria injections lowers the resistance of

the spirochetes, thus making them more vulnerable, and it also inhibits reproduction of the organisms.

It should be remembered always that as time goes on the spirochetes tend to become localized and often foci are formed in tissues or organs where they are not so easily reached by blood stream medication. Most often, of course, these foci exist in cardiovascular or cerebrospinal tissue. In some obscure cases liver lesions may be suspected. That spirochetes may exist in "nests" for months or years is proven by the appearance of chancre redux (a gumma appearing at the site of the original primary lesion).

Shock therapy (milk, bacterial, malarial, prostate, or other injections) by producing a reaction in the patient will bring about marked improvement. Combined with arsphenamin, bismuth or mercury injections, this treatment is definitely beneficial. It is a serious mistake to attempt to outline any routine course of therapy for these cases. The treatment must be individualized. In some cases the auxiliary treatment must be combined with arsphenamin, in others with mercury, or bismuth or iodid—or all may be used. Do not forget that you are treating a patient and not a disease.

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Irving Bancroft, Los Angeles—There are some cases of syphilis in which the Wassermann reaction remains positive in spite of all methods of treatment. Before any case is labeled as Wassermann-fast, all the usual methods of attack should be used and the various drugs changed at intervals. It should also be borne in mind that most syphilitics are undertreated. If, on the other hand, efficient treatment has been given for a sufficient time and the Wassermann still remains positive, we should content ourselves with the thought that a positive Wassermann never killed anyone and, after all, maybe this positive Wassermann is an evidence of a certain degree of immunity.

The preponderance of evidence is that a positive Wassermann has more to do with the immunological response of the individual than with the activity of the disease. Moore and Kemp have shown that when a Wassermann is late in developing that the resistance of the individual is less than when it becomes positive early. Chesney has shown that treated rabbits, in which the treatment has been begun late, are refractory to a reinoculation and that they are still refractory after all evidence of activity has disappeared. In other words, there is a certain immunity developed after prolonged treatment. He has also shown by experiments that this immunity exists at a time when

inoculation of the macerated glands and tissues do not result in spirachetal growth.

It is probable that in every case of syphilis there is some fibrosis of the heart and blood vessels, especially the aorta. This is the price of the degree of latency which we call a cure. The long-continued assaults of arsenic, mercury and bismuth on the liver and kidney put a similar price on treatment, and so it is up to the physician at any time during the treatment to balance the two. Are the little spirochetae in their nests of fibrous tissue less harmful than the metallic molecules which are continually assaulting the liver and kidneys. This balance has a definite relation with the time when the term "Wassermann-fast" should be applied.

When the term "Wassermann-fast" definitely applies to a case it is time to give up trying to kill the spirochetae and turn to smothering tactics. In other words, it is time to turn to the development of natural immunity. Non-specific medication is possibly the first method to consider. From 2 to 5 cc. of boiled milk or aolan should be injected intramuscularly. Five doses at weekly intervals may be used. It is assumed that periodic examinations have been made at intervals during the treatment. At any rate at this time a complete examination should be made and all defects should be corrected. This should include a complete spinal fluid and neurological examination and an x-ray of the aorta. General hygienic advice should be both positive and negative. Positive, by prescribing a diet and regimen, and negative, by prohibiting all mental and physical strain, as it is conceivable for a fibrosed aorta to last for many years if not strained, and we often see a luetic nerve system which functions satisfactorily for years but which breaks down when abused.

Practically all of these Wassermann-fast conditions are in persons who have had the infection for years, and when we start the treatment of these cases we should realize that a considerable proportion have a Wassermann which no treatment will modify. The unfortunate part is that the negative Wassermann has been upheld as the goal, and when it becomes apparent that it is not attainable, the effect is as disillusioning to the patient as to the child who is informed that Santa Claus is a myth. We should in these cases rather stress that the goal which we are striving for is a state of health in which the signs of syphilitic degeneration are so small that they cannot be detected.

* * *

Hermann Schussler, San Francisco—Few problems of modern clinical syphilology are as pressing and as difficult as the management of so-called "Wassermann-fast syphilis." In the first place, since we do not know the ultimate biological mechanism of the Wassermann reaction, it is difficult for us to determine the exact significance of the asymptomatic "fixed positive." Wile of Ann Arbor, in a most interesting paper, intimates that the fixed positive should not be regarded as absolute proof of continued spirochetal activity, but

may at times be merely a "scar," comparable to an old corneal opacity from a previous interstitial keratitis.

Accepting, as is commonly done, the positive Wassermann as definite evidence of uncured syphilis, like a mucous patch or a gumma, what are the factors that make this one isolated symptom resistant to prolonged and intensive treatment when all clinical symptoms and signs have long since yielded? Three such factors are recognized at present, and will be taken up in order, with therapeutic suggestions appropriate to each.

1. An undiscovered focus of the disease may exist, usually in the aorta, central nervous system, liver, or bones, into which the specific drugs have not been able to penetrate in effective concentration. Here all the facilities of modern diagnostic procedure must be brought into play. A spinal puncture and a complete neurological examination will often disclose entirely unsuspected lesions in the nervous system. X-ray studies of the heart, aorta and skeleton may reveal latent cardiovascular or osseous syphilis.

In all these cases, drugs of increased penetrating power should be employed. The following routine is suggested:

Novasurol is given intravenously twice a week, the dosage being 0.8, 1, and thereafter 1.2 cc. After twenty such doses, neoarsphenamin is given twice a week for ten doses of 0.6 to 0.9 grams each. Mesurol, a highly potent but painless form of bismuth, is given intramuscularly on the same days as the last two novasurols and all the neoarsphenamins, making twelve doses of 1 cc. each. The above course, which lasts thirty weeks, is repeated without rest periods until the Wassermann test is negative, and once thereafter potassium iodid should be given by mouth at the same time, 1 or 2 grams before meals and at bedtime. Silver arsphenamin, 0.2 to 0.3 grams, may replace neoarsphenamin in alternate arsenical courses.

2. The patient's spirochetes may have become resistant to the drugs that have been employed. Here we must vary the mode of therapeutic attack as widely as possible by employing new preparations and new routes of administration. For this type of case the routine suggested above often works admirably. Novasurol intravenously is an ideal way of giving mercury. Mesurol is highly praised by German authors for its rapid serological effect. I still believe that a high grade neoarsphenamin, given twice a week in 5 cc. of normal salt solution, is the arsenical of choice. The use of saline generally permits an 0.9 gram dose.

3. The patient's natural defense mechanism may have broken down, and must be rebuilt before further progress can be made. A rest period from specific drugs is first in order, with mental and physical rest and nutritious food. During this time the old heavy metals must be eliminated by a course of intravenous injections of sodium thio-

sulphate, given three times a week for a month or two, the dose gradually increasing from 0.2 to 1 gram. During this time all focal infections in teeth, tonsils, sinuses or prostate must be found and removed; and all functional disturbances such as hypothyroidism or achylia gastrica, corrected by appropriate medication. Finally a course of twelve intramuscular injections, given twice a week, of 5 cc. of whole boiled milk will complete the patient's non-specific immunization, after which specific therapy may be resumed with greatly increased effect. Always remember that you are treating a human being, not a laboratory report.

* * *

C. E. Schoff, Sacramento—When considering the subject of this discussion one must realize that he is dealing with one of the greatest enigmas of modern medicine. The entire field of syphilology must be reviewed and also the therapeutic procedures that have led to the conclusion that the end-results of medication have not accomplished the much sought and expected laboratory index of complete control of the afflicted.

As time goes on and as our experience becomes wider in the field of syphilitic therapy it seems that we must more often agree with Dr. Udo Wile that there is fallacy in the continued effort to treat a physically well patient with a persistent positive serological finding; that much harm has and can be done to the very important liver and kidneys in these cases; and that we show too little mercy on these organs until the danger signs are quite obvious in our effort to achieve a technical advantage.

It is needless to repeat the admonitions of the previous discussers that we exhaust every diagnostic means both clinical and laboratorial in an effort to uncover a possible focus which might explain the persistence of the blood findings. There is one point, however, which does bear repetition and one which is too often overlooked by the therapist in his anxiety to administer the so-called specific medications, and that is the general condition of the patient. One of the best assets to a more favorable recovery is a good physical condition, and every effort should be made to attain and to keep such condition from the earliest date of treatment.

The changing of arsenicals, mercuries, and bismuths, all fortified with the iodids, are added ammunition to the therapeutic arsenal. Too often we learn from the patient that persistent reactions following each treatment are signs of high chemotherapeutic efficiency of the drug administered. I certainly cannot subscribe to this reasoning and must believe that these reactions are more harmful than beneficial and contribute ultimately to the Wassermann-fast factor in some cases.

Meyer's work with sodium thiosulphate certainly deserves consideration in these Wassermann-fast cases. He has unquestionably proven that this drug has a therapeutic value; that arsenic is held as an insoluble compound in the chemical

cellular elements of the skin for months and years, and that it can be liberated by the use of sodium thiosulphate properly administered. The writer has corroborated Meyer's findings in a limited but encouraging use of sodium thiosulphate in the so-called Wassermann-fast or arsenic-fast patients who have previously been under all types of medication for four and five-year periods.

It is impossible for anyone to outline a definite routine procedure of treatment for the type of patients under discussion. Each patient must be individualized, and when the clinician determines that the persistence of the serological findings is not associated with any definite focus and that the general condition is about par, he should endeavor to retain this condition of general well-being and lay less stress on the laboratory findings.

Pressing Kills Germs, German Scientist Finds—Berlin—Science has discovered that the pressing of clothes has a higher function than that of merely keeping a knife-edge crease in trousers. Prof. M. Hahn, director of the Berlin Hygienic Institute, has recently performed experiments with mechanical ironing machines whereby overcoats, trousers, and blankets, were completely sterilized of disease-producing bacteria.

Through the entrance of steam into the ironing plates, a temperature of from 212 to 223 degrees Fahrenheit can be obtained in a few seconds, the scientist and his assistants report. This can be raised to 252 degrees in a comparatively short time. The time period is so measured that every fabric, according to its thickness, is exposed to the steaming from twenty-five to thirty seconds.

Thick overcoat material which had been smeared with many kinds of dangerous bacilli, and camel's hair blankets were found to be entirely freed by the ironing process of pus-forming bacteria and germs closely related to the typhoid bacillus. Tuberculosis bacilli placed in trousers pockets were killed in thirty seconds by the application of steam. Spore-forming bacteria required longer treatment. At least eight minutes of ironing was necessary to destroy these resistant types, it was found.

While disinfection apparatus is still advisable for rendering a large quantity of materials free from germs, the use of ironing machines is especially valuable for small and moderate-sized hospitals, sanatoriums, hotels, and sleeping cars. Professor Hahn pointed out, because the apparatus is inexpensive and easy to operate.—*Bull. Wayne Co. Med. Soc.*

The Public Health Service continues to provide medical and hospital treatment of sick and injured American merchant seamen and other government beneficiaries—the oldest function of the service and the specific purpose for which it was organized under the act of July 16, 1798, 129 years ago—and probably at no time during this period has the aid thus given by the government to American merchant vessels been of greater value or of more importance in keeping the American flag on the seas.

More than 300,000 beneficiaries apply annually at 152 ports of the United States and its insular possessions where marine hospitals and relief stations are maintained for the giving of hospital and out-patient treatment and making physical examinations. There were 1,288,061 hospital days' treatment given, mostly to merchant seamen and coast guardsmen, and 632,341 separate out-patient treatments were supplied. The American seamen are the principal beneficiaries, receiving 67.4 per cent of all the hospital treatment furnished. The Coast Guard furnished 14 per cent of the clientele, while the Employees' Compensation Commission constitutes about one-fifth of the total of the service beneficiaries.

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EDITORIALS

MEDICAL SOCIETIES AND REAL ESTATE OWNERSHIP

Few guilds are older than the profession of the healing art. Marked as is the profession, by the dignity and worth of its work and its long record of honorable achievement and service in practically every civilized country on the globe, it is more than astonishing that the societies of this great profession have never seemed to actively sense either the direct advantages and comforts of buildings of their own, or the large indirect good that would come through the prestige of such material possessions.

It may be said of the members of the medical profession, as individuals and in their societies, that too often they have been distinguished by a seeming complacency with their academic discussions; and so much so that they presumably have given little more than transient thought to the ownership of buildings in which could be housed their meeting rooms, museums, library alcoves, and other accessories; and the possession of which would go far in raising the tone of professional education and practice, as well as in promoting among the laity a greater respect for those practitioners of the healing art who stand for decent standards of preliminary education and of professional training and work.

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It is true that abroad, and also in a few of the older cities of the United States, there do exist buildings which are owned and operated by medical organizations, but the number of such is not

at all what might be expected of us. Especially so, when we consider how in late years social and business clubs and organizations of comparatively recent origin have been able to erect splendid structures, which not only give facilities for all the activities of such groups, but which oftentimes also are provided with rental areas that help care for the overhead of maintenance of the structures and of the club departments housed therein.

* * *

An equally striking and perhaps more remarkable exhibition of this loyalty to group traditions and ideals which manifests itself in the erection of club houses, is to be seen in the chapter houses of the Greek-letter fraternities. These organizations are a conspicuous feature of American university and college life. Here groups of young men, ten to thirty or so, mostly in the age period of fourteen to twenty-two, under their own and the guidance of alumni or graduate members, find themselves housed during the nine or ten months of the scholastic year in structures ranging in cost from a few thousands to one or two hundred thousand dollars.

This widespread college fraternity building activity that has come into existence in large part only in the last two or three decades should make every one of us ask the question: "What is there in a college fraternity, in the way of nobility of ideals or service, over and above that existent in the practice of the healing art that should lead college fraternity men, for instance, to generously plan and bring about the construction of chapter homes; when, on the other hand, the members of the medical profession, with equally good or higher ideals and service, and also the economic necessities of their calling, are seemingly indifferent to the construction of meeting place and study homes, although needing the same as much or vastly more than do some of the Greek-letter guilds?"

* * *

When in our respective communities we note how all types of organizations, such as churches, clubs, and what not, devise ways and means and successfully build homes in order to better carry on the work for which they came into existence, we must certainly acknowledge that for so ancient and honorable a guild as our own we have on the whole little to boast about when we contemplate the few buildings owned by our societies. Why should this sad condition obtain? And if it does, is it not time that we set about gradually to bring into being a better state of affairs? Are not our obligations to our profession both those of the today and of the future; and will we progress greatly, either singly or as a group, if we fail to think and to plan for the morrow?

* * *

In the medical profession a medical society that has its own meeting halls, its library, its museum, must certainly be assumed to be more virile than one which does not possess these things. It certainly has conditions favorable to greater development for its own members. For such facilities are the groundwork upon which after-graduation

study and work can best be erected; and when brought into being in any community, mean that the members of the profession there residing have provided themselves not only with local postgraduate facilities, but also with the inspiration that results from the better work that is always associated with increased study and knowledge. In other words, in such communities, with our medical societies properly housed, we who use these homes, should become better doctors than would otherwise be the case.

These lines are prompted by the hope that many members in the various component county units of the California Medical Association may make inquiry of themselves as to the reasons why their own societies should not consider the financing of medical society homes in their respective communities; such society homes, of course, to be in harmony with the size of the organizations and environments involved.

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It is not claimed that such medical society homes can be built in a year, but certainly, after consideration and discussion, the movement to institute a building fund for such a future home may be started at almost any time; if the members of the profession in any locality properly visualize their problem.

All that is necessary in the smaller organizations is a board of, say five trustees, one to be elected each year for a five-year term, to whom all subscriptions would be pledged or paid, or who as a permanent quarters board would conserve such funds for home purposes and make the acquisition of a society home a major problem for study and action in each such community or county.

In the larger organizations a more complex method of procedure would be necessary. Here in California the method of incorporation of society officers, recently permitted by the state and put into operation by the San Francisco County Medical Society, is a very good plan to use as a model.

* * *

In this connection it is very gratifying to call attention to the fact that in the last few years the San Francisco and Los Angeles county societies have come into possession of properties valued at many thousand dollars; so that in the next five years or so we shall probably be able to witness a splendid expansion of those active organizations.

What those two large county societies of the California Medical Association have been able actually to accomplish, in lesser measure but nevertheless as efficiently for local needs, may be accomplished by other county units of not so large a membership.

* * *

In Los Angeles, when Dr. Harlan Shoemaker in the year 1920 urged the purchase of a certain lot at a price of \$24,500, the Association had in its treasury not more than \$5,000. Fortunately, by the good fortune of transformation of the street on which this purchased lot was located into a business thoroughfare, the property increased enormously in value. Then new thoughts and plans came into existence; and the Association,

still owning the first lot, purchased a splendid second lot, 200 feet front by 175 feet deep, only a few blocks away from the other, for the sum of \$80,000; and on this property the society intends to erect its future home.

In the meantime the first lot has been leased to a corporation composed largely of physicians, who will erect thereon a medical office building; and the rental for the use of the ground will in a few years net the county medical society an income based upon 10 per cent of the gross receipts of the building, with a minimum guarantee of \$15,000 a year rental. An interesting feature is the fact that the lease has been so drawn that a self-appraising rental will be worked out on the basis of the income of the building.

At this time it is estimated that the value of the real estate of the Los Angeles County Medical Association which has been purchased in the last seven years has a value of about \$380,000.

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In San Francisco, equally meritorious work has been done, that pioneer county unit purchasing outright the Irwin home, built by one of the great San Franciscans of the days gone by at a cost of thousands of dollars, the property being purchased practically at the lot value alone.

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In Los Angeles a goodly proportion of the funds needed in these purchases was raised through subscriptions of \$100, which were made by the majority of the members of the society, and which, if so desired, were payable in annual installments.

Analogous methods of procedure have been used in many other organizations. If one uses good judgment in the selection of the property purchased, if property is bought within the means of the present and prospective funds, then a start may be made along these lines, much as college fraternity and other organizations have done over and over again, and as we hope medical societies of today and tomorrow will also do.

* * *

In order to start a building fund in substantial manner, through one hundred dollar subscriptions as outlined, the organization may proceed as already described. If it is not desired to make such subscriptions compulsory on all members, it could be provided that all members of the society who paid the annual dues would be "members" of the said county society; whereas all those who subscribed for the one hundred dollar building fund subscription would be known as "fellows" of the said county society.

That is practically the same plan as is in vogue in the American Medical Association, in which all who are members of state society units are "members of the A. M. A."; whereas those who pay \$5 a year to the national organization, are known as "fellows of the A. M. A."

In the national organization, for the \$5 so paid, in addition to the "fellowship," is also given the *Journal of the A. M. A.* In our county units, by a similar plan, in addition to the "fellowship in the county society," would go the right to be a

part of the "permanent quarters fellowship," and the right to vote for the officers and trustees thereof.

Some such plan as this would make it possible to admit every eligible man into a county unit, and would give all members who wished, the opportunity of taking part in the creation of a building fund and home. It may be assumed also that in good time the very large majority of members in any county unit would voluntarily affiliate and cooperate in the further development of such a permanent quarters fellowship. The plan is really quite simple if one is in earnest; and in the light of what other organizations of lesser strength have actually accomplished, quite practicable.

* * *

What has been advocated on possession of property by component county units also may be made to apply to state medical associations.

In the last two years, in our own California Medical Association, this subject has received very considerable attention and has been much discussed by the officers and many members who are interested.

In an organization like the California Medical Association, with some 4400 members, the possession of a headquarters home could be made to offer many advantages not now possessed by us. As a matter of fact, if the fates be kind, it may be possible for the California Medical Association as a state organization to see realized a headquarters dream such as our two largest county units have already brought into existence. And with such possession of headquarters homes by such a triad, we can look forward to the days not long distant when a goodly proportion of our remaining county units will have similar structures to their credit.

* * *

Let us think about it. We live in the today and the tomorrow, rather than in the past. We must move forward, remain stationary, or slip backward. In our own group of followers of the healing art we have ample potential strength to make our movement go forward, and decidedly forward. Headquarters homes for our societies will be a material aid in such progress, and will be well worth the thought and effort we give thereto.

CERTIFIED MILK COMMISSIONS OF COUNTY MEDICAL ASSOCIATIONS

About twenty-five years ago the first certified milk commissions came into existence. The permission to use the copyrighted term "certified" was granted only to committees or commissions of county medical associations. That was a most fortunate safeguard.

In California, the Certified Milk Commission of the Alameda County Medical Association was the first to be organized, being followed shortly after by that of Los Angeles County.

* * *

Today a very different viewpoint is held by producers and laity, concerning the production of pure and clean milk, both as regards certified and

ordinary raw or pasteurized milk, than was prevalent a quarter of a century ago.

Much of the credit of this change in attitude must be placed to the propaganda initiated and carried on by the certified milk commissions, in cooperation with the medical profession of our country. It should be gratifying to all who did some of the pioneer work in this phase of public health endeavor to note what far spreading results have sprung from the original effort which was especially designed to provide clean pure milk at least to our invalids and children.

* * *

In California, in addition to the Alameda, Los Angeles, and San Francisco Certified Milk Commissions, which inspect dairies of considerable size, there are a number of commissions in cities of lesser size. Recently the commissions of the three metropolitan centers, through conference, have united on conjoint rules to safeguard the production of certified milk in our state.

As we look back at our original contracts and now read the very explicit rules laid down concerning: (1) the testing of cattle in the California herds, or which are to be brought from other states into the herds; (2) the housing and feeding of the cows; (3) the physical examination of all employees in such dairies; (4) the safeguards concerning water supplies, the handling and cooling of the milk, the rules concerning sewage disposal and many other factors, we see exemplified what is in one sense only an application and amplification of the aseptic precautions in vogue in modern operating rooms of hospitals.

The results of attention to the scientific principles involved in the production of this foodstuff which is capable of oftentimes being an ideal culture medium for certain pathogenic bacteria, shows itself in milk samples which today can be collected at food depots, and which will be found practically free from all forms of filth, and with a minimum of bacterial contamination.

* * *

So pure and clean has the certified milk so produced become, that California, year after year, in spite of the long distance of shipment to eastern cities where the competitions were held, has brought home prize cups offered by the Association of American Milk Commissions; one certified dairy in southern California being especially fortunate in this respect.

* * *

Today the procedures used in producing a certified milk are, in the main, the aids that have gone through the acid test of experience in the last two decades. Our memory goes back to some of the first work done by the Los Angeles Commission when we helped to devise a card for scoring dairies, before even the Bureau of Animal Industry of the United States Department of Agriculture printed its own form; and when we drew plans of simple and moderately priced cooling sheds in an endeavor to entice the ordinary dairy-men to cooperate in producing cleaner and safer milk. We still visualize several of the Sunday inspections of the commission, when all the members left the automobile to aid in driving cows

from the bed of the Los Angeles River, so that the then water supply of that city might not be contaminated!

From efforts such as those, in many cities of many states, and through the efforts of the medical men who comprised the certified milk commissions, with the cooperation of federal, state, county, and city public health officials, there came into being, from one end of the country to the other, among both the members of the medical profession and the laity, that better orientation of milk production that has done so much in making this most valuable food safer; so that hundreds and thousands of fellow citizens who might otherwise have contracted fatal diseases through drinking dirty and dangerous milk, are today alive and doing their work as useful citizens of our land.

* * *

For many years the commercial producing and distributing companies, which are such big factors in milk distribution in most metropolitan centers, stood aloof from the certified milk work; hesitating not, however, here and there, to make use of the commission propaganda and good reputation which the word "certified" had built up for itself, to put forward substitute non-copyrighted names such as "guaranteed" or "A1" milk and so on, to make their own milk more attractive to buyers.

However, in the last several years a number of producers of ordinary milk have shown a desire to get into the certified milk business because of the great demand today for such high grade milk. It will be interesting to note how such cooperation will work out.

* * *

It is also worth remembering at this time that the whole subject of the relative value of raw and pasteurized milks and the dangers supposedly inherent in each is being much discussed. As a result of these investigations, it is quite possible that California laws on the production and distribution of milk will be brought into operation within the next five years which a few years ago would have met with much opposition. On those phases of the subject, however, discussion is here waived for future occasion.

* * *

In addition to the certified milk benefits above mentioned, others have accrued. For example, reference can be made here to the fact, that from the very modest tax charged to the owners of certified dairies, on the milk-bottle caps which can be used only with the sanction of a certified milk commission, the Certified Milk Commission of the Los Angeles County Medical Association was able during the last twenty years to accumulate a considerable reserve fund in its treasury.

In the early days of that commission's existence, the late Dr. Stanley P. Black, health officer of Pasadena and a well-known member of the California Medical Association, for some years gave his services in dairy and employee inspection, and in chemical and bacteriologic examinations, without cost to the commission.

In honor of his work, and the services which he in those days so generously donated, the Los An-

geles Commission during this last month has set aside the sum of \$10,000 to be used in the development of the Stanley P. Black Memorial Museum when the new home of the Los Angeles County Medical Association is erected.

* * *

Exemplifying then, do all these things, that "Large streams from little fountains flow, Tall oaks from little acorns grow"; and that if only we be content to meet the problems of each day, then in good time, in proportion to the application and wisdom we display, will beneficent things be bound to come to pass.

The medical profession and the people of America may well be proud of the certified milk commissions and the splendid work by them thus far accomplished.

EXEMPTION OF WELL CHILDREN FROM PHYSICAL EDUCATION

The deputy superintendent of the Department of Public Instruction in a letter to the secretary of the Board of Medical Examiners recently called attention to the abuse of a medical privilege that is destructive of school discipline and authority; that is, the right to exempt from physical education school children with a physical handicap or disability. Complaint was made that well children were able to secure such exemptions from physicians. A case was cited "of a child, who had secured such a statement from a physician of questionable standing, who was not able to be excused by the regular school physician." Mr. Cohn asks what could be done "to strengthen the position of the school authorities against such practice on the part of physicians who have no regard for what the schools are attempting to do in the betterment of health conditions on the part of the pupil."

It would seem that any physicians who have dispensed such certificates must have moved along the lines of least resistance and have thoughtlessly acceded to requests from patients or parents of patients without due consideration of the resulting effect upon the morale of the school and the exempted child. There is no question that the few physicians who may thoughtlessly have dispensed unwarranted exemptions put an onus on the many who are just and fair in their decisions.

Due regard for both the profession and the school authorities demands that such exemptions be granted only to a pupil whose health and well-being will be injured by such exercise. A fair view of the problem will eliminate any possible cause for complaint.

THIS JOURNAL AND ITS FIRST GREAT WORK—PHILIP MILLS JONES AND HIS PART THEREIN

In the Readers' Forum column of the Miscellany department of this issue of CALIFORNIA AND WESTERN MEDICINE, is a letter from Dr. George H. Evans of San Francisco which will bear reading and thought by all who are willing to extend their contemplations of the practice of medicine

beyond their own personal professional and economic interests.

To fight the good fight for a good cause is always an inspiring experience. Not that we wish to be Don Quixotes, launching our lances at imaginary enemies or straw-men. Rather to be hard-headed, common-sense individuals, deeply loving this profession of the healing art, its great opportunities for humanitarian and altruistic endeavor which it gives to each of us, and being willing in good faith to battle for its uplift and progress.

* * *

A man imbued with such a viewpoint was the late Philip Mills Jones. When our Journal was founded, Doctor Evans was chairman of the publication committee that had much to do with determining whether or not the views on medical policy of its then editor, Doctor Jones, should be sponsored. In his letter he very properly calls attention to the service which California, some twenty-five years ago, rendered to organized medicine in the United States. For at that time our state society may be said to have launched and led the fight to eliminate what were little more than patent medicine pronouncements from the advertising pages of state, district and national journals, both society and privately owned or controlled.

* * *

It may seem to some readers that in these columns we are overemphasizing this service which was then rendered. Such members should permit the reminder that the elimination of certain proprietary medicines from the pages of ethical medical journals not only took from national and state publications printed matter that was scientifically and ethically offensive, but it brought about one by one the demise or the very decided diminution in influence of a considerable number of private or semiprivate medical publications, which had subsisted in good part on the income from such offensive advertising; and which for that reason were all the more dangerous because their reading columns were used for insidious, unscientific and at times almost reprehensible medical propaganda.

* * *

The Council on Pharmacy and Chemistry of the American Medical Association may be said to have come into being as one of the results of that fight for right. In all these years the verdicts of that Council have been found to have been absolutely warranted in almost every instance. The value of its opinions in moulding the therapeutic practice of the profession of America has been very great; even though often forgotten or not even acknowledged by a host of colleagues, who though profiting from its investigations, in their personal practice seem to be so self-centered that they presumably do not sense how much of their own indirect success may have been dependent upon the sound judgments passed out by this important bureau of our national association, and which judgments all of us, of necessity, must utilize.

* * *

We are glad that Doctor Evans wrote the letter referred to, for he knows whereof he speaks. So do the colleagues, also, who were doing their part

for organized medicine with him and others a quarter of a century ago.

We are proud of the late Philip Mills Jones, just as we are proud of the late William Everett Musgrave, the late Saxton Pope, the late James Parkinson, and others who in CALIFORNIA AND WESTERN MEDICINE and in other society work aided in the maintenance of the standards for which we of California and the Pacific Slope states have always been steadfast.

* * *

We may be in the far West, and at times some of our confrères in the East may even think of us as wild and woolly, but with this western atmosphere there comes other compensations, not the least of which is, stating what is what, and why is why.

That is what Philip Mills Jones did years ago. His successors also met the issues of their day as those issues arose, and hesitated not to say their say. This spirit of independent thinking and action is one of the wonderful rewards of living in this glorious western country. The Argonauts and Forty-Niners had that spirit to a marked degree, and those of us who belong to a later generation do well to treasure and maintain it.

CARBON DIOXID

One must regret that carbon dioxid finds itself so infrequently available to practitioners. Added, in 1920, to a [rather sorry] group of respiratory stimulants, the gas has been found comparatively dependable and serviceable in various capacities. This uniformity of performance may well devolve from an identity if not a congruence with the physiological stimulus to respiration.

Practically one gives carbon dioxid usually at 5 per cent strength, in either atmospheric air or oxygen. Football bladders, when filled, are of a good size and convenient to handle. The more modern types of gas anesthesia apparatus carry carbon dioxid cylinders. A machine so equipped grants to the anesthetist the most exact form of control. Induction can both be enforced upon and modified for intractable patients. It facilitates quick transfer from one to other anesthetic level. Should the respiratory center turn laggard, breathing often can be fortified. The administration over, expulsion of the anesthetic can be hastened by an artificially induced hyperpnea.

Its earliest application was in behalf of persons suffering from carbon monoxid poisoning. In this instance it is used with oxygen. The ability of carbon monoxid to abstract a variable fraction of the body's hemoglobin and to fix it in stable union leaves the work of normal gaseous exchange for an overburdened remainder. When carbon dioxid is used, quickening and deepening the breathing, and excessive oxygen supplied on which to feed, the work of that fraction which labors is lessened.

The gas is serviceable against the depressions of morphin and alcohol, and has been suggested for such different exigencies as oligopnea in the newborn and for medullary traumata. All of its uses are interesting and many have a proven scientific worth.

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members.

Tropical Medicine

Sprue—Sprue is of sufficiently frequent occurrence in California to merit review in this column. Fourteen cases have come under critical study in this service. Persistent, unexplained diarrheas, especially but not invariably appearing in the early morning, with a tendency to bulky fermenting stools, are always a matter of suspicion. Fairly recent residence or travel in the southeastern United States, Caribbean and Pacific islands or the Orient is important contributory evidence. Strangely enough, sprue is not believed to occur in tropical Africa. Sprue cannot be excluded, however, by lack of such residence in the endemic area.

Sprue is a chronic afebrile diarrheic disease which exhibits a progressive gastro-intestinal atrophy of mucosa, stomatitis, and very frequently, anemia and nervous system changes. Exacerbations and remissions are characteristic. The disturbance in the gastro-intestinal mucosa begins as a catarrhal inflammation and progresses toward atrophy, although death may come before definite atrophy. Nervous disorders include mental and somatic manifestations, ranging from moroseness, irritability, and poor memory, to paresthesias, anesthesias, and flexor contractions. It is a disease of diverse symptomatology and insidious onset, which explain its difficult recognition before fairly advanced stages. Like beriberi, it may be considered a group of disease types, similar, but with considerable variation of clinical picture. The anemia is secondary in type at first and begins early. Later it often becomes pernicious in type, although pernicious features at times appear early also. Many cases arise on the basis of a precedent dysentery, usually amebic. Autopsy findings frequently seem inadequate to explain the profound disturbances of physiology seen in life.

Sprue is primarily a disease of the white race, but its major incidence is not in the white man's countries. There may well be clinical, pathologic and etiologic differences in sprue arising in different geographical areas. Exhaustion from over-exertion, disease or nervous strain, seems to be an important predisposing factor. Of the causative factors claimed by various writers, none can be fully accepted today. If it is a specific disease, we must consider that the single cause is totally unknown, or that some factor now under suspicion becomes operative under special conditions of physiologic exhaustion or dietary imbalance. The close relation to pernicious anemia is further emphasized by the case of sprue successfully

treated with liver diet by Bloomfield and Wyckoff (*Cal. and Wes. Med.*, November, 1927). A case of ours with a less severe anemia was resistant to liver, and remission only followed a series of transfusions. This is in line with the suggestion of Reed and Wyckoff that the methods of treating pernicious anemia and sprue might be interchanged with advantage (*Common Picture of Sprue, Pernicious Anemia and Combined Degeneration*, Amer. J. Trop. Med., May, 1926).

The treatment of sprue is on a far from satisfactory basis. It may be thus summarized: permanent removal from an endemic district; rest and recuperation by use of climate, moderate altitude and tonic drugs; dietary regimen along the classical lines of Manson, using transfusions and liver or its extracts in addition where the anemia is severe; and the symptomatic use of drugs. This last brings in hydrochloric acid, digestive ferments, astringents, mild colonic irrigations, and occasionally castor oil. Vicarious nutrition by inunctions and intravenous methods sometimes helps. Vaccines and various sera do not seem to us to be advisable.

ALFRED C. REED,
San Francisco.

Cancer

Cancer Research—To even the casual observer it becomes more and more apparent that an increasing volume of laboratory research on cancer is being directed along chemical lines. One of the most interesting of recent publications comes in the form of a "Critical Review" by R. K. Cannan, of the University College, London, on "The Metabolism of Tumors," one of a series of such "critical reviews" of various phases of cancer research appearing in *The Cancer Review*, an abstract journal founded last year by the British Empire Cancer Campaign and rapidly becoming indispensable to those who would keep in touch with literature of malignant disease.

This article is a summary and comment on a series of papers by Warburg and others on the relation of oxidation and fermentation in malignant and normal tissues. It appears that there are two sources of energy for tissues—the combustion of carbohydrate by oxygen to carbon dioxide and water; and the fermentation (in the absence of oxygen or at least without its use) of carbohydrate to lactic acid; so that carbohydrate may

1. Cannan, R. K.: The Metabolism of Tumors. *The Cancer Review*, ii, July, 1927, pp. 189 to 202.

be consumed either aerobically or anaerobically. Stated in the briefest possible way, the very complicated and ingenious experiments described seem to indicate that aerobic utilization of carbohydrate (oxidation) predominates in normal resting tissues, while the opposite is true of malignant tissues, where fermentation predominates by an overwhelming ratio.

This observation leads to two very interesting hypotheses. In the first hypothesis—the theory of the origin of malignant growth—Warburg "regards a tissue as a community of cells having wide individual differences in their respiratory (oxidative) and fermentative activities. Thus some few cells of a normal tissue will have all the metabolic characteristics of neoplastic cells. In the economy of the whole tissue their high fermentative activity will make no significant contribution owing to their very limited number. Should, however, a local condition of chronic anoxemia occur, the majority of the cells will be killed, since they will be unable to respire, but the few cells which possess sufficient fermentative activity . . . proliferate, and from them will develop a malignant growth. Thus cancer cells are regarded as present in all normal tissues, and the exciting cause for their proliferation is held to be a sustained lack of oxygen. 'Irritation' becomes 'anoxemia.' This highly interesting view remains, at present, without direct evidence in support or denial."

In the second hypothesis, a novel method of treatment is suggested. It appears that tumor cells are, so to speak, "facultative anaerobes." In the presence of an abundant supply of glucose, fermentation will predominate. In the absence of glucose or in the event of a limited supply, oxidation will be carried on to an extent sufficient to insure survival. But deprived of both oxygen and glucose, tumor cells will not survive. Tumor-bearing rats were kept for from four to forty hours in an atmosphere containing only 5 per cent oxygen. After even the shorter periods, the great majority of the tumor cells had been killed. The tumor was unable to compensate for lack of oxygen by increased sugar supply owing to the relative constancy of the systemic blood-sugar concentration. The expedient is suggested of giving insulin to reduce below normal the blood-sugar at the same time that the oxygen supply is cut down. Possibly the gentleman in Kansas City who is reputed to treat patients in a tank in which the oxygen supply is much increased by raising the air pressure, might be more nearly in accord with experimental evidence if he would reverse his process, reducing instead of raising oxygen pressure and perhaps administering insulin at the same time.

Cannan points out that there are many facts to be explained and many observations to be made before Warburg's theories can be accepted as facts; but that Warburg, and those who have

worked along similar lines have opened up an avenue of biological research which will scarcely be denied a rich reward.

ALSON R. KILGORE,
San Francisco.

Neuropsychiatry

Emotional Factors in Disease—At the Washington meeting of the American Medical Association several papers on "Psychic and Emotional Factors in Disease" were read in the medical section, indicating that the internists are realizing the need of a practical medical psychology.

That the symptoms, course and prognosis of disease are profoundly influenced by mental factors is an observation as old as medicine, but not always appreciated.

Stumbling blocks in the practice of medicine are in unintelligent patients, lack of understanding, hence poor cooperation, while in both intelligent and unintelligent people the disease picture is greatly influenced by intellectual and emotional factors.

The emotional (or affective) condition exerts in disease an influence far in excess of any intellectual factor.

While we have no exact knowledge as to the cause of the emotions which are experienced subjectively only, we feel pretty sure that they are connected with physical processes and that differences in affectivity in different people depend upon a difference in constitutional equipment.

Medical psychology is paying more and more attention to constitution, physical and mental, and its effect upon reaction to morbid influences.

We know that the affective condition exerts a profound influence upon attitude, expression and speech, as well as upon the cardiovascular and glandular systems and upon metabolism, while conversely the emotional state is strongly affected by disease, as shown in the anxiety of heart disease, depression and irritability in digestive troubles, euphoria in phthisis, etc.

On the psychological side, we are convinced of the importance of the emotional condition existing at the time in forming, fixing and linking together our conceptions and in determining their relation to the field of consciousness.

The facilitating and inhibiting influence of the emotions upon the content of consciousness may lead to certain elements of this content being bound together through a corresponding emotional tone into what has been called a "complex." Such a complex even if it is not actually in the field of consciousness, nevertheless remains a permanent unit in the psychic dynamics and may be awakened and brought again into consciousness by anything which arouses the emotional tone characteristic of it.

Whether or not we accept Freud's theory of an "unconscious" sphere wherein are contained certain suppressed mental elements and complexes, which though they cannot be reproduced voluntarily, nevertheless profoundly influence the psyche

and also can translate themselves into physical symptoms ("conversion hysteria"), is immaterial for our present purpose.

We know that in a sick person an injudicious communication or any circumstance producing a painful emotional state may bring into consciousness a train of ideas which can unfavorably influence the progress of the case. Also we are aware that violent emotions as rage and fear may cause a sudden paralysis of a damaged heart; a rise of blood pressure which may produce a fatal apoplexy in an arteriosclerotic; inhibition of gastrointestinal secretions; increased peristalsis, which may manifest itself as diarrhea; involuntary discharge of urine and feces; and exceptionally an intestinal spasm which may be severe enough to suggest an organic obstruction which must be attacked surgically. It is also conceivable that chronic and recurrent emotional disturbances may set up vicious circles which in time result in actual organic change.

Therefore the physician should not only study the physical constitution of his patient, but should attempt also some estimate of his probable emotional reactivity.

To this end a knowledge of his past activities, his family, social and business relationships, may well contribute in deciding not only whether he has sufficient intelligence and good will to co-operate, but also in estimating how he can best be managed, what should be avoided, etc.

The proper control of the emotions cannot but improve the prognosis.

This is to be attempted not only through dietetic, hygienic, physical and medicinal measures, but also by tactful avoidance, kindly reassurance, and throughout everything an atmosphere of favorable suggestion.

CHARLES LEWIS ALLEN,
Los Angeles.

Obstetrics

Heart Disease in Pregnancy—Heart disease is and always has been a serious malady; taking many lives and crippling others. In the United States statistics indicate an increase in mortality rate in cardiac diseases. It may almost be said that in late years the general public has developed a cardiophobia. It is therefore pleasing to find in Doctor Cabot's book, "Facts on the Heart," the following statement: "The first, and in some ways the most important point of all is to know most 'heart disease' is imaginary."

In contrast to this statement is the quotation from "The Beloved Physician" by Wilson, a book which gives the life history of Dr. James Mackenzie, the great heart specialist of London: "The girl was dead. She died of sudden heart failure. Her child remained unborn in her womb. James Mackenzie, as he turned to break the news of her death to her husband, tasted the bitterest anguish which any doctor can experience."

"One hour later in his consulting room, as he paced the floor in the deep silence of the small hours, the full horror of this calamity was

revealed to him. The question sprang to his lips, would this death have occurred if I had a better knowledge of heart afflictions?" It was thus Mackenzie became a heart specialist.

As obstetricians, we cannot all become heart specialists, but we should ever be ready to recognize danger signals. A. Leyland Robinson, M. D., London, in the *Lancet* of January 22, 1927, suggests the following treatment for cardiac complications of pregnancy:

"(a) *Without Heart Failure*—After full investigation of the heart and full allowance for the various cardiac loads, the pregnancy may be permitted to continue so long as the cardiologist estimates the reserve as satisfactory.

"(b) *With Heart Failure*—Unfortunately, a patient may become pregnant when her heart is imperfectly compensated, or she may develop heart failure before seeking advice, or even when under treatment. Under these circumstances, the obstetrician is often advised to terminate the pregnancy forthwith.

"On the contrary, every effort must be made to restore the compensation of the heart before the termination of the pregnancy is decided upon.

"(c) *Control of Repeated Pregnancies*—Although it may be fairly advanced that the first pregnancy and labor produce the maximum muscular strain, and that subsequent labors are frequently short and easy, yet repeated pregnancies should be forbidden to all patients who have any heart lesion. In any event, adequate spacing of the children is essential in order that the heart may be given ample time to recover from the strain of one pregnancy before being exposed to the effects of another.

"(d) *Mode of Delivery*—If the cardiac reserve is sufficient to enable the patient to play games and lead an active life when not pregnant—i. e., almost perfect—normal delivery at full term may be safely allowed; at the same time, the induction of premature labor and the use of forceps are always useful procedures, as they mean less work for the expelling muscles and, consequently, less strain on the heart. For cases in which the cardiac reserve is seriously reduced cesarean section is probably the least risky mode of delivery. This operation has many advantages."

In our own practice we aim to follow a program similar to the above, and we believe the obstetrician should also have, associated in some cases, a skilled cardiologist.

Recently a multipara came under our observation—eight months pregnant, mitral lesion, pulse 100 to 140, B. P. 135.80, dyspnea, orthopnea, slight edema of ankles, some passive congestion of lungs with cough. Under treatment with close observation, rest in bed, ice bag to heart and digafolin, the heart showed some compensation. Patient went into labor after a four weeks treatment. Ethylene was given and forceps applied. After a short labor, and with treatment continued, the patient went home in two weeks, with greater compensation. The first thought was cesarian section, but with the patient under observation,

she was permitted to continue her pregnancy. Evidently, her cardiac reserve was increased.

In the out-patient obstetrical department of the College of Medical Evangelists, we often come in contact with organic heart lesions. We have found that nearly every woman with such lesions can carry through pregnancy successfully; but should have good prenatal care, and this may include hospitalization under close observation.

P. MARTIN KELLER,
Los Angeles.

Dermatology

Treatment of Chronic Urticaria—One of the most trying and vexatious therapeutic problems that may come up before a clinician is the clinical control of chronic urticaria.

This condition, common and simple as it may seem, frequently proves to be extremely distressing due to its chronicity, persistence and acute suffering during the attacks. The crucial point of the problem is that urticaria, etiologically considered, is not a definite entity, but merely a symptom which may be produced by a great variety of endogenic and ectogenic factors, not uncommonly defying the most skillful and intensive efforts of detection.

The initial glowing hopes that the problem of urticaria will be solved in the realm of protein sensitization through anaphylactic skin tests failed to materialize. Subsequent laboratory studies showed that not more than 66 per cent of all urticarias give positive anaphylactic tests. On the other hand clinical observations have revealed that in many cases in which the suspected offending proteids were eliminated from the food, the results were negative. It was pointed out and demonstrated by Duke that urticaria may be induced not only by physical agents such as heat and cold, but also by psychic and emotional factors. These observations have rendered the therapeutic control of urticaria still more difficult and uncertain.

In view of these facts, a new therapeutic agent, alleged to be capable of giving a lasting relief in chronic urticaria, should be acclaimed a godsend and a boon, both to the suffering patient and the harassed clinician.

Such new agent, ephedrin sulphate, has been introduced by Beatrice Kestien¹ of the Dermatologic Clinic of Columbia University.

Ephedrin is an active principle of the Chinese drug *ephedra vulgaris*. Its pharmacologic action is similar to that of epinephrin. It has a stimulating action on the peripheral vasoconstrictors and is a cardiac accelerant. *It differs from epinephrin in being effective, whether administered hypodermically or orally, in producing a more sustained effect and in its low toxicity.*

Ephedrin has been used as an astringent for mucous membranes, to stimulate circulation and elevate the blood pressure in Addison's disease, and in other forms of chronic hypotension.

It is well known that urticarial wheals disappear temporarily after a hypodermic injection of epinephrin. This fact suggested that a longer remission might be obtained by the slower and more sustained action of ephedrin administered orally.

The oral dose of ephedrin sulphate varies from 50 to 125 mgms. in capsules 25 mgms. each or in 3 per cent solution every two to six hours. Harmful results due to ephedrin were not observed.

Ephedrin sulphate was administered orally to seventeen patients suffering with chronic urticaria and angioneurotic edema with complete relief in nine and improvement in four cases.

In spite of the small number of cases reported the results are so striking and promising that the report by Doctor Kestien can be considered a distinct contribution to the solution of the urticarial problem.

MOSES SCHOLTZ,
Los Angeles.

United States Public Health Service—Smoke Studies—Smoke in the atmosphere, especially when combined with mist to produce fog, brings about a very great lowering of the daylight. At the present time a great loss of light results in large cities from the effect of smoke. A study of the decrease of light by smoke, now being made by the United States Public Health Service in New York City, at the lower end of Manhattan Island where the air is very smoky, showed an average loss of daylight due to smoke in January of 1927, on sunny days, of 42 per cent at 8 o'clock in the morning, and of 18 per cent at noon. These amounts of loss of daylight decreased, as the year advanced, to 33 per cent at 8 a.m., and 6 per cent at noon, in June. These figures are for clear sunny days; for foggy days the loss is much greater. The loss of light due to smoke in the atmosphere is greatest early in the morning or late in the afternoon, and least at noon. As would be expected, the loss of light is greater in the winter than in the summer. The figures given show the great importance of getting rid of smoke in our great cities. Loss of daylight or the light rays is not the only evil resulting from the presence of smoke in the atmosphere; smoke also cuts out to a much greater extent the ultra-violet rays which are so necessary for good health.

Mushroom Poisoning Yields to Serum Treatment—Chicago—Gustatory connoisseurs addicted to the consumption of the toothsome mushroom have reason to feel a little more secure in their enjoyment of their favorite steak accompaniment.

What appears to be a successful serum for mushroom poisoning has been developed by Dr. Dujarric de la Riviere, professor at the Pasteur Institute in Paris, according to a report just made to the American Medical Association by its French correspondent.

The French doctor prepared his serum by inoculating a horse with increasing doses of four highly toxic mushrooms and then used it to treat laboratory animals, obtaining highly successful results.

When called to the assistance of a family in which three people had been poisoned at the same time, it happened that he was able to secure only two ampoules of the serum from the Pasteur Institute. These he administered to the two patients who appeared to be most seriously stricken, with the result that the two who received the serum injections recovered while the one who did not, died.

When a report of his research was presented to the Congress of Hygiene, that body passed a resolution recommending that supplies of the new serum be kept in hospitals and so far as possible in the town halls of villages for the accommodation of physicians.—*Bull. Wayne Co. Med. Soc.*

1. B. Kestien: Arch. Dermat. & Syph., August, 1927, p. 189.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION

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OFFICIAL NOTICES

Fifty-Seventh Annual Session

The 1928 meeting of the California Medical Association will be held at Sacramento, April 30 to May 3 inclusive. So closely associated is Sacramento with the beginning of medical history in California that it is particularly fitting that the California Medical Association should occasionally make a pilgrimage to the place of its birth. An account of the organization at Sacramento of the Medical Society of the state of California in 1856 will appear in a later issue.

The city of Sacramento must be given the credit of having established the first Board of Health in California on March 22, 1862. Drs. F. W. Hatch, J. F. Montgomery, T. M. Logan, and Ira E. Oatman were its members. The duties and powers of the board and the duties of physicians and others were defined. This was the second City Board of Health in the United States, the first having been organized in the city of Boston a few years previously.

Among present members who formerly practiced in Sacramento are: Thomas B. Huntington, a pioneer of antiseptic surgery; D'Arcy Power, James H. O'Connor, Albert McKee, Mark Woolsey, Charles D. McGettigan.

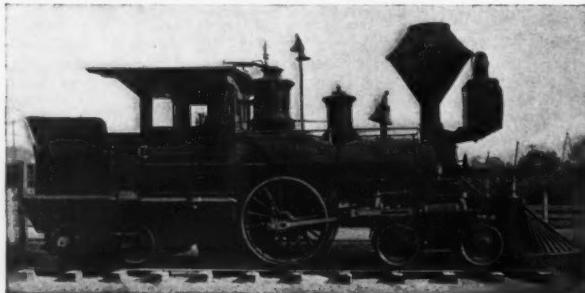
Members who were born in Sacramento are: Wallace I. Terry, Stanley Stillman, George Ogden, Charles B. Pinkham, Edward Twitchell, and Gerald G. Fitzgibbon.

Official Headquarters

The Hotel Senator will be official headquarters. Those who plan to attend the meeting should make reservation early.

Meeting of the Council

The next meeting of the Council of the California Medical Association will be held in the English room of the Palace Hotel, San Francisco, on March 24, 1928.



Old locomotive, Engine No. 1. First on Transcontinental Railroad. Engineer Lonergan is still living. (On exhibit at Sacramento.)

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Amendments to the Constitution

Second Printing
Enabling Act

Amend Article XII of the Constitution relating to Amendments by striking out the existing article and substituting in lieu thereof, the following:

The House of Delegates at any annual meeting including the meeting at which this amendment is adopted may amend any article of this constitution by a two-thirds vote of the delegates present and acting; provided that any amendment to the constitution is submitted in writing and laid on the table for twenty-four hours previous to being considered and acted upon.

Article XII Incorporation

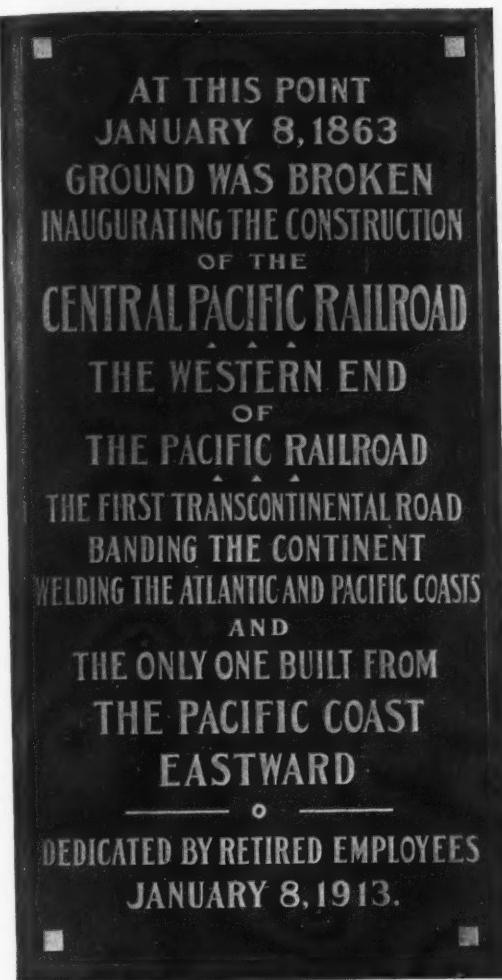
To aid in carrying out the object of the Association, the House of Delegates at any session of any regular or special meeting thereof, may by a two-thirds vote of the members thereof present and acting, authorize, empower and direct the Council to cause the formation and organization of a non-profit corporation under the laws of the state of California, without capital stock, with such incorporators, name, purposes, objects, principal place of business, term, number of directors and directors to serve for the first year and until their successors are elected, and with such provisions regarding the voting power and property rights and interests of the members of the corporation and such further provisions in the Articles of Incorporation thereof, and with By-Laws and composed of such members representing this Association as the Council shall prescribe, fix and determine. The House of Delegates may at its option in connection with the granting and giving of such authority, power and direction to the Council, prescribe, fix and determine any or all of such matters pertaining to the said corporation, its Articles of Incorporation, and any provision thereof, By-Laws and membership, and its action thereof shall bind the Council; and the House of Delegates at any session of any regular or special meeting thereof may by a two-thirds vote of the members thereof present and acting, authorize, empower and direct the Council to grant, assign, transfer, convey and deliver to the said corporation upon the formation thereof without any consideration therefor, any property, real or personal, of the Association, which authorization, power and direction may be given prior or subsequent to the formation and organization of said corporation.

Correction of Error in December Journal

William H. Bucher, M. D., of Olive View Sanatorium, was erroneously reported deceased, in the December issue of CALIFORNIA AND WESTERN MEDICINE. William H. Bucher, D. D. S., was the man who died at the French Hospital in Los Angeles, on September 11, 1927.

The use of the title Dr in place of the proper degrees, the identity of the names and of the place of residence are doubtless responsible for this error.

A letter from Doctor Bucher of Olive View Sanatorium states the announcement is a mistake and requests correction, which we are glad to make.



Tablet erected at First and K Streets, Sacramento, to mark terminus of first Transcontinental Railroad.

COMPONENT COUNTY SOCIETIES

ALAMEDA COUNTY

The December meeting of the Alameda County Medical Association was held at the Ethel Moore Memorial Building, Monday, December 19, 1927.

Doctor Royer discussed Korsakoff's disease, presenting cases to demonstrate the outstanding symptoms of loss of memory with memory gaps filled with wide confabulation. Doctor Royer pointed out that Korsakoff's syndrome may occur with or without multiple neuritis and that the pathology is chiefly a diffuse involvement of the cerebral cortex with changes which are chiefly in the bodies of the cells with intact nuclei. Doctor Royer emphasized the importance of elimination and careful feeding in the treatment, pointing out that practical starvation often exists in these patients.

Dr. N. Austin Cary read a paper on "Some Interesting Foot Lesions, with Special Reference to Osteitis." He reviewed the pathology of these conditions, including Paget's disease, Perthe's disease, Madelung's disease, Kohler's disease, and hypertrophic osteoarthropathies, illustrating his discussion with case reports and urging the importance of early diagnosis in order that correct treatment might be started promptly.

Following Doctor Cary's paper Miss Frances Stern, chief of the Food Clinic of the Boston Dispensary,

discussed in some detail the work of that institution. She emphasized the importance of food and diet in the treatment of disease and demonstrated the need for an organization able to translate the doctor's food prescriptions into menus.

There being no business the meeting adjourned.

GERTRUDE MOORE, *Secretary.*

* LOS ANGELES COUNTY

The regular meeting of the Los Angeles Obstetrical Society was held on January 10. Drs. A. M. Muchnic and N. Kavinoky presented a case report of congenital atresia of the esophagus, and detailed the origin as a faulty development of the trachea in most instances. The patient died at thirteen days, a week after a gastrostomy. Doctor Kavinoky discussed a possible operative mode of treatment to enclose the lower esophagus and later join the two segments.

Dr. L. G. McNeile discussed resuscitation of the asphyxiated infant. After detailing the various methods that have been used, he expressed his preference for tracheal catheterization combined occasionally with carbon dioxide-oxygen inhalation and tongue traction. Alpha-lobelin has given him satisfactory results. He brought out incidentally that the tracheal catheter was first advocated in 1780 and demonstrated the use of the catheter in a very convincing manner.

Dr. A. J. Scott in discussing the immediate treatment of intracranial hemorrhage noted that hemorrhagic disease probably was the cause of as many cases of intracranial hemorrhage as was traumatic injury. After citing several cases he gave treatment of first, injection of whole blood from a parent; second, lumbar or cisternal puncture; and third, rest with the absolute minimum of handling.

Dr. S. F. Stewart, by invitation, presented his work on sections of the gray rami of the sympathetic nerves in treating spastic paralysis resulting from intracranial injury. He follows the work of Royal and Hunter of Australia, and the results have been most gratifying. His paper was illustrated by moving pictures of patients before and after operating.

The meeting was attended by a larger audience than was any session for the last two years.

WILLIAM B. THOMPSON,
Secretary Obstetrical Section.

* ORANGE COUNTY

The thirty-ninth annual meeting and banquet of the Orange County Medical Association was held at the Ebell Club, Santa Ana, at 7 p. m., January 12, 1928, with about eighty persons present.

Following a fine dinner was a program of speaking and musical numbers. Dr. Danforth C. Cowles of Fullerton, retiring president, read a paper, "A Review of 1927." Dr. J. I. Clark of Santa Ana was toastmaster and installed the officers for 1928. Dr. Dexter R. Ball, Santa Ana, who for the past five years has been secretary-treasurer of the Association, will be the president for 1928; Dr. E. J. Steen, Fullerton, vice-president; and Dr. F. Harold Gobar, Fullerton, secretary-treasurer.

Dr. C. D. Ball, father of the president-elect, is the only remaining charter member of the organization. He gave a short talk, recalling characters and incidents of the days past.

Mrs. R. A. Cushman and Dr. G. M. Tralle gave short talks. Rev. George A. Warmer of the First Methodist Church of Santa Ana, gave the main address of the evening on "Hospital Mindedness."

F. HAROLD GOBAR, *Secretary.*

* * * RIVERSIDE COUNTY

Meeting of the Riverside County Medical Society was called to order in regular session, President Jones presiding. The minutes of the meeting were read and approved as read.

New Business—Doctor Telford of the State Board of Health was present and spoke on the health work of Riverside County and State generally. He commended the program as worked out in Riverside County and urged that the doctors use their influence

to continue this program as closely as possible. Following his talk the subject was discussed by several members, and Dr. W. W. Roblee presented the following resolution:

Resolved, That the Riverside County Medical Society hereby reiterates its opinion previously expressed, that a full-time combined health organization for the city and county of Riverside is most desirable, and we urge that the present plan of cooperation between Riverside County and City, the State Board of Health, and the International Health Board be continued.

This resolution was duly seconded and on vote was adopted and copies of this resolution ordered sent to the mayor of the city of Riverside, the president of the State Board of Health, the Board of Supervisors, and the International Health Board.

Membership—The application of Reynold D. Smith, was voted on and he was unanimously elected to membership in the society.

The name of Howell Babcock, graduate of Jefferson Medical College, year 1915, was submitted for membership. Doctor Babcock came to Riverside from the New York County Medical Society where he has been in practice in New York City for the past six years, holding several clinical positions. Doctor Babcock is now in general practice. Application was recommended by Bon O. Adams, and Will H. Holmes.

Program—The program of the evening consisted of a symposium on the thyroid gland as follows:

Presentation of type cases—W. W. Roblee.

Anatomy and pathology (lantern slides)—Paul E. Simonds.

Differential diagnosis and medical treatment—W. W. Roblee.

Basal metabolism and x-ray treatment—P. F. Thuresson.

Surgical treatment—C. R. Geith.

This symposium was very interesting, and active discussion was participated in by various members.

Buffet supper was served at close of evening.

THOMAS A. CARD, Secretary.

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SAN BERNARDINO COUNTY

Minutes of the meeting of the San Bernardino County Medical Society, held at the San Bernardino County Hospital, January 3, 1928.

Meeting was called to order by the president at 8:15.

Minutes of the previous meeting were read and approved.

Doctor Moseley reported for the County Hospital committee.

Transfers to Santa Clara County Medical Society were granted to A. W. Donaldson, Lenore D. and C. R. Campbell.

W. M. Chapman and Marcus D. White were admitted to membership in San Bernardino County Society.

The program of the evening was then entered upon: Appendicitis: Its Complications and Treatment—P. M. Savage. Discussion opened by E. L. Tisinger.

Amebiasis—G. S. Landon. Discussion opened by F. S. Modern.

Supper at 10:30.

There were forty-two present.

Meeting adjourned at 10:50.

E. J. EYTINGE, Secretary.

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SAN DIEGO COUNTY

The last society dinner of the old year was featured by an excellent discussion on child welfare by members of the local society. The discussion was opened by a carefully thought out paper by Doctor Cordua, director of child hygiene for the city and county of San Diego.

The following is a digest of Doctor Cordua's talk:

Preventive medicine is being sponsored by lay groups because medicine's great battle for the preser-

vation of human life and health is no longer being fought against bacteria; it is being waged against the greatest of all evils—Ignorance.

A superficial study of the causes of death in any community forces the conviction that some time before the critical moment of birth the life of the child has been so beset with the hazards of ignorance, social and economic environment, as to make the ordinary struggle for existence pale into insignificance.

The public has definitely awakened to the fact that there is no more important work than that of providing adequate care for the expectant mother as well as proper environment and living conditions in the home in which the child begins his life.

The ear of the most advanced of the medical profession is attuned to the message of childhood, and it remains for those who consider themselves entitled to speak for the children to put this message into form for the rest of the medical profession to consider. Since the need for child protection in the matter of positive health is recognized we must begin at the moment of conception to prepare the young life for the fullest enjoyment of a good mental and physical inheritance.

Let us then attain this ideal and strive to provide adequate prenatal care for every mother in America. Let us make it our business to see that every child has the food which an all-wise providence has provided. The outstanding fault in breast feeding is its low incidence. Let us demand for the community's children that which the wisest mother demands for her child: *viz.*, proper hygienic surroundings, early instruction in the elements of hygiene and good health and a periodic health evaluation which shall include a complete physical examination, an inventory of the child's health and social habits, and his emotional life.

To provide these essentials for all children is to recognize a wise economy. It is infinitely more expensive to any community to allow children either to die prematurely or to come to adult life ill prepared or maladjusted.

This venture requires teamwork. A cooperative alliance between the medical profession and lay organizations is not only desirable, but is essential to the best interests of all.

The discussion of this admirable presentation was entered into at some length by Doctor Wier from the standpoint of the obstetrician, Doctor Thornton as representing the pediatrician, Doctor Andrews from the standpoint of the psychiatrist. Doctor Welpton from the viewpoint of the clubwoman, stated during her remarks that the program of the associated women's clubs called for one meeting a month on public welfare. Dr. Will Potter discussed from the standpoint of the general practitioner.

The December meeting of the Mercy Hospital staff was treated to an excellent program on heart conditions, illustrated by moving pictures of the action of the organ. Dr. Harry Spiro of San Francisco, who gave the talk, will be gladly welcomed again to San Diego when he can find it convenient to call.

On Saturday, January 7, the society was the guest of the Scripps Metabolic Clinic, whose directors, Colonel Milton A. McRae and Mr. J. C. Harper, tendered a dinner at the Casa de Manana in honor of the clinic's guest, Doctor Sturgis of Michigan University. After the dinner the guests reassembled in the auditorium of the La Jolla Women's Club where Doctor Sturgis gave a clear-cut talk on our latest knowledge on pernicious anemia as worked out in his laboratories at Ann Arbor. His paper will appear in a future issue of CALIFORNIA AND WESTERN MEDICINE.

ROBERT POLLICK.

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SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held January 5, 1928, in the hall of the Medico-Dental Club, 242 North Sutter Street. In the absence of the president, Doctor McGurk, first

vice-president, presided. The meeting was called to order at 8:45 p. m. Thirty-three were in attendance. Those present were: Drs. S. R. Arthur, J. W. Barnes, E. L. Blackmun, J. F. Blinn, H. S. Chapman, Fred J. Conzelmann, J. D. Cameron, J. F. Doughty, Linwood Dozier, C. F. English, William Friedberger, E. Frost, Percy B. Gallegos, Minerva Goodman, R. R. Hammond, Sam Hanson, Charles D. Holliger, J. P. Hull, H. E. Kaplan, Boyd M. Krout, G. H. La Berge, R. T. McGurk, W. T. McNeil, F. G. Maggs, F. S. Marnell, F. J. O'Donnell, George H. Sanderson, L. E. Tretheway, A. L. Van Meter, G. J. Vischi, and B. F. Walker. Dr. O. D. Hamlin of Oakland and Mr. Hartley F. Peart, attorney for the California Medical Association, guests and speakers of the evening. Visitors: Mr. M. Shaughnessey and Mr. E. Arthur.

The minutes of the previous meeting were read and approved.

The committee on admissions reported favorably on the applications of Drs. Boyd M. Krout and Dietrich V. Wiebe. In accordance with the provisions of the Constitution the Chair declared Doctors Krout and Wiebe duly elected active members of this society.

Communications from the president, Dr. J. J. Sippy, Dr. Linwood Dozier, Dr. Ernest C. Griner, and Dr. H. E. Kaplan were read and ordered filed.

Drs. H. E. Kaplan, L. Dozier, G. H. Sanderson, C. D. Holliger, and Dewey R. Powell presented the following resolution as an amendment to the Constitution:

Resolved, That the officers of the San Joaquin County Medical Society be elected by a popular ballot;

That the president and vice-president serve, ex-officio, as members of all standing committees;

That the secretary of the society be a member of the board of directors;

That the nominations take place one month prior to the election, and that the ballots be sent to all members of the society so that they can vote whether present or absent at our annual election.

Moved by Doctor Walker and seconded that the proposed amendment be voted on at the next regular meeting of the society, as provided by the Constitution. The motion carried.

Doctor McGurk made a few brief remarks relative to the work of the Legal Committee, of which he is the chairman.

The president presented Doctor Hamlin of Oakland, who gave a splendid talk on the subject, "County Hospitals of the State of California." He emphasized the need of organizing an efficient social service system, which will in most instances be sufficient to eliminate pay patients from county hospitals. For every patient admitted to a county hospital, whether he pays or not, increases the taxes. Show the taxpayers that pay patients in the county hospitals are increasing the cost and they will be ready to regulate admissions to county hospitals. When in doubt about a pay or non-pay patient, admit him but do not charge him.

Mr. Hartley F. Peart, attorney, followed Doctor Hamlin and gave a splendid talk on the legal problems involved in the conducting of private and county hospitals. The practice of medicine involves many problems; the invasion of cultism is a serious one, and the service clubs, insurance companies, industrial medicine pay clinics, health centers, free tuberculosis hospitals, hospitals for crippled children, as well as county hospitals tend to eliminate the general practitioner, lessen his income and have a trend toward state-controlled medicine. To adjust all the various problems in medicine we must get a united thought of the medical profession. It must be accomplished through the efforts of our associations: county, state, and national. Through the unifying power of our associations we will become conscious of our common interests and above all conscious that, while there is endless variety and color and interest in our profes-

sion, there is but one interest in our association and that one interest is to move as a united body to accomplish life's greatest ends in medicine. The speaker suggested that carefully planned publicity and education of the public was one way to accomplish our aims. Legislation must be carefully guarded. The question of state medicine and hospitals is economic, political, and scientific. A lively discussion followed in which many of the members participated, and many questions were asked and answered by the speakers.

Doctor Doughty moved that the Legal Committee be encouraged to continue its good work with the advice of the state council so that its aims may be accomplished. The motion was seconded and carried.

Moved by Doctor Dozier and seconded that the society extend a rising vote of thanks to the speakers of the evening. Motion carried unanimously.

There being no further business the Chair declared the meeting adjourned at 11:45 p. m.

FRED J. CONZELMANN, *Secretary.*

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SANTA BARBARA COUNTY

The annual meeting of the Santa Barbara County Medical Society was held at the University Club on January 9, 1928, with President H. E. Henderson in the chair.

At the banquet preceding the meeting there were present thirty members of the society and three guests.

During the dinner Dr. Rexwald Brown presented to the society the following resolution, which was signed by all the members present, and copies of which were to be forwarded to Senators Johnson and Shortridge:

We, the members of the Santa Barbara County Medical Society, do sincerely appeal to you to assist in revising the Revenue Act, which as interpreted by the Commission of Internal Revenue, places on our, and the shoulders of the entire medical profession of the United States, a discriminatory tax.

We appeal for relief from discrimination with respect to the deduction of traveling expenses to medical meetings. The relief has been granted to other professions, and we are unable to understand why the medical profession is subject to the seeming injustice.

Doctor Profant then rendered several songs which were greatly enjoyed by all present, and also led the society in singing a few numbers.

At the conclusion of the dinner Dr. Van Paing introduced Dr. Ramon Ostaja, who spoke on telepathy, hypnosis, levitation and self-induced hypnotic states. He demonstrated mental telepathy by discovering a hidden pencil and demonstrated a cataleptic state, during the stages of which pulse readings were made.

The speaker of the evening, Dr. Edgar Gilcreest of San Francisco, gave a most illuminating discourse on the life and works of Sir William Osler. The talk was extremely interesting and held the audience spell-bound for over an hour.

The society then went into executive session. The minutes of the previous meeting were read and approved.

It was moved, seconded and carried, that Dr. Francis J. Hombach and Dr. Clarence T. Roome be admitted into membership.

It was moved, seconded and carried, that the resignations of Doctors Varick, Culler, and L. B. Coblenz be accepted.

It was moved, seconded and carried, that Dr. C. S. Stoddard be made an honorary life member of the Santa Barbara County Medical Society, no further assessments for dues to be made against him.

It was moved, seconded and carried, that Dr. Edgar T. Gilcreest of San Francisco be invited by the Santa Barbara County Medical Society, his expenses to be paid by it, to talk before a joint meeting of the Service Clubs on "Quacks and Quackery."

It was moved, seconded and unanimously carried, that this society go on record as endorsing the whole-

sale inoculation of all children against diphtheria by toxin-antitoxin, and that all means possible be used to dispense this information to the general public.

The following officers were then elected for the ensuing year:

W. D. Sansum, president; N. H. Brush, vice-president; W. H. Eaton, secretary-treasurer; H. G. Hanze, Solvang, first vice-president at large; O. C. Jones, Santa Maria, second vice-president at large. Delegate for two years, H. J. Ullmann. Alternate for two years, F. R. Nuzum.

The president then appointed, first, a program committee consisting of Doctors Brush, Means and Eaton, and, second, Board of Censors consisting of Dr. Samuel Robinson (chairman), Drs. Rex Brown and Ed L. Markthaler.

There being no further business the meeting adjourned.

WILLIAM H. EATON, *Secretary.*

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SANTA CRUZ COUNTY

The initial meeting of the Santa Cruz County Medical Society for 1928, primarily a business session, was held in Santa Cruz on January 10. The following members were present: Bettencourt, Cowden, Dowling, Eiskamp, Farmer, Fehlman, Gaynor, Hatch, A. L. Phillips, P. T. Phillips, W. A. Phillips, Randall, Sullivan, and Woodard.

It was decided to distribute the fee schedule, adopted by the society last year, in printed form among the members. Plans for scientific programs during 1928 were discussed and Dr. Jesse Farmer was placed in charge of the programs for the year. The next gathering of the society will take place some time in March, and will be under the auspices of the members residing in the San Lorenzo Valley. Ben Lomond will probably be selected as the meeting place, and we are anticipating a delightful evening around the fireplace in that interesting mountain community's library.

Election of officers for the year resulted as follows: Ehler Eiskamp, Watsonville, president; W. E. Fehlman, Santa Cruz, first vice-president; M. Bettencourt, Watsonville, second vice-president; Samuel B. Randall, Santa Cruz, secretary-treasurer. Dr. A. L. Phillips was selected as the society's delegate to the annual state convention, with Dean Woodard as alternate. The following censors were elected: Grant Hatch (1929), Liles (1930), and P. T. Phillips (1931).

Following the business of the evening, Dr. Stanley Dowling, who recently returned from an extensive European tour, entertained the group with interesting reports of his trip, especially emphasizing the economic and surgical aspects of medical practice as found on the continent.

SAMUEL B. RANDALL, *Secretary.*

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TULARE COUNTY

The regular monthly meeting of the Tulare County Medical Society was held at Motley's Café in Visalia, following dinner at 6:30 p. m. The meeting was called to order by President Zumwalt. Members present were: Doctors Hicks, Newton Miller, Zumwalt, Tourtillott, Ginsburg, Rivin, Seligman, Bond, Gilbert, Campbell, Fowler, Betts, Lipson, Furness, and Kahn. Election of officers was held, and the secretary instructed to cast a white ballot for each of the following: W. W. Tourtillott, president; L. L. Seligman, vice-president; H. G. Campbell, secretary-treasurer; J. R. Hicks, censor; E. R. Zumwalt, delegate. W. W. Tourtillott, alternate.

The secretary was instructed to draw up a resolution of sorrow at the loss of our esteemed member, John Colwell Paine, who died at the Kaweah Hospital in Visalia on Sunday, December 4, of influenzal pneumonia. He had served the society well, both as president and as secretary, for many terms.

Dr. Frank R. Ruff of the Burnett Sanitarium of Fresno was present, and gave us a talk on x-ray path-

ology illustrated with lantern slides. His talk was more than interesting, and a vote of thanks was tendered Doctor Ruff by the society.

Meeting adjourned at 10 o'clock.

HORACE G. CAMPBELL, *Secretary.*

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YUBA-SUTTER COUNTY

The Yuba-Sutter Medical Society held a meeting on January 17 at which G. S. Delamere, Marysville, was elected president for the ensuing year.

F. W. Didier, Wheatland, was elected secretary-treasurer.

The credentials of Russell R. Craft (late of Twin Falls, Idaho), were accepted and he was admitted as a member.

A regular meeting will be held on the second Tuesday in each month.

F. W. DIDIER, *Secretary.*

DEATHS

Adam, George. Died at Los Gatos, December 20, 1927, age 84 years. Graduate of the Jefferson Medical College, Pennsylvania, 1880. Licensed in California, 1887. Doctor Adam was an honorary member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Dahl, William Z. Died at Sacramento, January 11, 1928, age 47 years. Graduate of the College of Physicians and Surgeons, California, 1904. Licensed in California, 1918. Doctor Dahl was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and a Fellow of the American Medical Association.

Fox, Willard H. Died at Los Angeles, age 66 years. Graduate of the Albany Medical College, New York, 1888. Licensed in California, 1895. Doctor Fox was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Friedlander, David. Died at San Francisco, January 8, 1928, age 50 years. Graduate of the Cooper Medical College, California, 1898. Licensed in California, 1898. Doctor Friedlander was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

McClurg, Katherine L. Died at Piedmont, December 28, 1927, age 55 years. Graduate of the Cooper Medical College, California, 1902. Licensed in California, 1902. Doctor McClurg was a member of the Alameda County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Myers, George R. B. Died at Napa, January 13, 1927, age 52 years. Graduate of American Medical Missionary College, Illinois, 1903. Licensed in California, 1910. Doctor Myers was a member of the Napa County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Nicholls, Robert J. Died at Auburn, December 16, 1927, age 47 years. Graduate of the Medical Department of the University of California, 1904. Licensed in California, 1904. Doctor Nicholls was a member of the Placer County Medical Society, the California Medical Association, and the American Medical Association.

Paine, John C. Died at Visalia, December 4, 1927, age 44 years. Graduate of Rush Medical College, Illinois, 1909. Licensed in California, 1910. Doctor Paine was a member of the Tulare County Medical Society, the California Medical Association, and the American Medical Association.

Tugge, Samuel P. Died at Stockton, December 18, 1927, age 65 years. Graduate of the Medical Depart-

ment of the University of California, 1889. Licensed in California, 1889. Doctor Tugge was a member of the San Joaquin County Medical Society, the California Medical Association, and the American Medical Association.

OBITUARIES

Henry Francis Wagner

The medical profession suffered a severe loss in the untimely death of Dr. Henry Francis Wagner in the San Francisco Hospital on October 24, 1927. At the time of his death Doctor Wagner was only thirty-one years of age, but he had already given promise of a brilliant career. The cause of his death was an infection contracted during the course of his clinical work to which he devoted much of his time.

The young physician was descended of pioneer stock on both sides. His father, who survives him, had long



HENRY FRANCIS WAGNER

ago made a name for himself nationally in the field of otolaryngology. His mother was the daughter of the late Hall McAllister.

After graduating from the medical school of the University of California young Wagner attended the University of Pennsylvania where he received the degree of Master of Medical Sciences. At the latter institution he was, as a graduate student, associated with Dr. Chevalier Jackson, the eminent bronchoscopist, and pursued advanced studies and research work in pathology under the direction of Doctor Kolmer.

The next two and a half years he spent in graduate work in Vienna, devoting much time to the intracranial complications of middle-ear infections. Here he worked under such eminent specialists as Professor Ruttin, Stefan Loos, and others.

On returning to California Doctor Wagner became affiliated with the University of California Hospital, and extended his clinical opportunities by joining the staff of the Mary's Help Hospital, at which institution he was visiting surgeon, in charge of the nose, ear, and throat department.

Although only on the threshold of his professional career at the time of his death he had already earned the respect and confidence of some of the most eminent specialists in his field. Quite as significant, however, was the host of personal friends he made both within and without the ranks of his chosen profession. His genial, kindly manner and ready sympathy made friends for him everywhere but especially endeared him to children, who quickly attached themselves to him, and to the needy poor to whom he gave generously of his skill.

Even in his last moments the engaging personality that played so large and characteristic a part in his life, did not desert him. After the onset of the angina, realizing that death was inevitable—and unable to use

his voice—he wrote many notes to those about him. In one of these he expressed regret that he must die without giving to his patients the advantages of his twelve years of special training.

In this physical and mental agony his face courageously again and again flashed that honest cheery smile that had instantly and enduringly endeared him to all.

To a nurse who bid him good-night on the last evening with "I will see you in the morning, Doctor," he smiled and truly wrote "I will not be here in the morning," and before morning Dr. Henry Francis Wagner had met death like the brave young soldier he was.

Wallace Alvin Briggs

In the death of Dr. Wallace Alvin Briggs his family, his community and the entire medical profession suffered a loss no one can estimate. To have known this noble man and his estimable wife was a rare privilege and is a sacred memory. Their home was hospitable, without pretense or patronage.

Doctor Briggs was, first of all, a gentleman with a helping hand and a responsive heart whose conscience, with his sense of right and justice, was his law of action.

In medicine, for which he did much both officially and professionally, he was both a pioneer and a connoisseur, always ready to supply what appeared to be lacking in material and technique and prompt to test all remedies that promised relief of suffering, but safely conservative in final approval and adoption of any measure.

He was strong in his convictions, positive in his statements, yet always tolerant and open to reason. Courageous without egotism, genial and confidential without pretense or sophistry. Modest to the point of obscuring his own personality in his desire and effort to support and strengthen a brother physician.

Among many gracious acts of Doctor Briggs our members gratefully remember that in 1895 it was his firm stand in favor of the immediate use of antidiaphtheritic serum, against a strong public sentiment, which saved the life of a beautiful nine-year-old girl. This, by the way was, we believe, the first time this great life saver was used in Yolo County.

It is the good fortune of those of us who still remain, to have the life, the works and the example of this modest benefactor as our heritage and inspiration. We mourn with all who knew and loved this benevolent man.

"A kind, true heart, a spirit high,
That could not fear and would not bow
Were written in his manly eye
And on his manly brow."

"He kept his honesty and truth,
His independent tongue and pen,
And moved in manhood as in youth
Pride of his fellow men."

To Doctor Briggs' relatives we tender our affectionate sympathy.

YOLO-COLUSA MEDICAL SOCIETY.

Committee: H. D. Lawhead.
Fred R. Fairchild.

Clifford Hugh Brooks

Resolutions upon the death of Clifford Hugh Brooks, M. D., passed by the Orange County Medical Society at called session, December 6, 1927:

Whereas, In the infinite mercy of Almighty God it has pleased Him to remove from our midst a friend and coworker, in the person of Dr. Clifford Hugh Brooks. Wherefore, we assemble together at this hour to honor his memory and worth, while submitting ourselves to the dispensation of Divine Providence we desire to give expression of our sincere grief in the loss of a beloved associate and to pay our tribute of affection and esteem to one so deserving of our highest praise and commendation.

In his many years of successful practice Doctor Brooks exemplified the highest ethics of his profession, and his influence upon all with whom he came in contact will long endure. At the bedside, whether

among friends or strangers, his kindly and genial disposition won for him the esteem of all.

When overtaken by illness in the active discharge of his chosen line of service to humanity he patiently submitted to his fate with a cheerful spirit until the end. For him there is no more endurance or suffering, but to the bereft family and friends, who mourn his going we offer the condolence of those who partake of a full share in the grief of separation.

Doctor Brooks' death is a great loss to the profession; therefore be it

Resolved, That the Orange County Medical Society express its realization of the loss that our society has sustained in the death of our beloved coworker and esteemed fellow citizen and our personal friend.

Resolved, That we extend to his wife and family our sincere sympathy.

Resolved, That these resolutions be spread upon the minutes of our Association and a copy presented to the family, also a copy be furnished the press.

NEVADA STATE MEDICAL ASSOCIATION

W. M. EDWARDS.....	President
G. F. SMITH.....	First Vice-President
G. W. GREEN.....	Second Vice-President
HORACE J. BROWN.....	Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....	Trustees

NEWS ITEMS

On January 10, the Elko County Medical Society held its annual dinner and election of officers for 1928 at the Mayar Hotel, Elko. The following officers were elected: R. P. Roantree, president; W. A. Shaw, vice-president; John E. Worden, secretary-treasurer; C. W. Eastman, censor. It was voted to invite at two to four meetings during the year some distinguished outside physicians to make addresses before the society.

The staff of the Elko General Hospital at a recent meeting elected the following as officers for 1928: C. E. Secor, chief of staff; John E. Worden, vice of staff; W. A. Shaw, secretary. The staff voted to request the county commissioners to build a nurses' home so that rooms now occupied by nurses in the hospital may be available for patients.

UTAH STATE MEDICAL ASSOCIATION

W. R. CALDERWOOD, Salt Lake.....	President
E. H. SMITH, Ogden.....	President-Elect
FRANK B. STEELE, Salt Lake.....	Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake.....	Associate Editor for Utah

OFFICIAL NOTICES

Goiter Survey Is Partly Done—Eighty per cent of the school children of the state, or 110,000 children, have been examined in a survey of the goiter situation in Utah, or about 25 per cent of the total population.

The survey was conducted under the direction of Dr. T. B. Beatty, state health commissioner, and was made by Dr. James Wallace, epidemiologist of the board.

As to samples of water for drinking purposes, that from Milford in Beaver County was the only sample found to contain enough iodin, and this water was obtained from wells 450 feet deep.

The report says—that "in general there was found to be a higher incidence of thyroid enlargement among those dwelling near mountain ranges, which exist in great abundance in Utah. These localities almost universally obtain their water supply from mountain streams, which carry down snow water that has had little contact with the soil and, consequently, scant opportunity of taking anything out of the soil, even if the soil contained it. Localities farther from the mountains obtain their water to a much greater extent

out of the soil through shallow, deep or driven artesian wells. In those districts, especially near the center of a depression between the mountains, the incidence of goiter was found to be very much less.

The percentage of goiter among the children examined in the different school districts of the state ranged from 26.3 per thousand population to 83.5 per thousand.

Eleven Thousand Nine Hundred Twenty-Two Salt Lake School Children Are Immunized Against Diphtheria—Eleven thousand nine hundred twenty-two school children in Salt Lake have been immunized against diphtheria in the campaign launched about a month ago, Dr. W. A. Pettit, city epidemiologist, reported Thursday to G. N. Child, superintendent of schools.

The cost to the Board of Health was 22½ cents a child, a cost considered moderate by the board, the report said.

The campaign is being continued for the benefit of those who have not yet received treatment, clinic being maintained at the Board of Health in the Public Safety Building each Saturday between 9 and 11 o'clock.

The superintendent said that all children who have not been immunized would be urged to appear at the Board of Health at the hours designated.

SOCIETY REPORTS

The Holy Cross Hospital Clinical Association held its last meeting for 1927 at the hospital the evening of December 21. The program consisted of case reports and a series of x-ray plates demonstrating the results gained in gall-bladder conditions by the Graham technique. Doctor Flood presented several interesting pathological specimens. Election of officers for 1928 resulted in the unanimous choice of Dr. Arthur Murphy, president, and Dr. George N. Curtis, secretary. The Association now has a membership of forty-two, and Doctor Curtis is planning some very interesting programs for the ensuing meetings the first of which will be held January 16. All members of the profession are invited to attend these meetings.

*

The Wasatch Academy resumed its weekly meetings on January 5, 1928, following the holiday vacation. The program consisted of a lecture on gastric resection following a modified Pola technique and using the new mechanical stomach sewing instrument now employed in stomach resections in Europe. The talk was illustrated with lantern slides by Dr. Floyd Hatch. Doctor Le Barge spoke on the differential diagnosis of angina pectoris and coronary thrombosis, and recited a case history of each, showing difference in symptoms, prognosis and course. Doctor Giesy spoke on some of the recent developments in physiotherapy and reported a number of cases with technique employed. Meetings weekly—Thursdays.

DEATH

Stringham, Briant. Dr. Briant Stringham, 74, died at his home at Bountiful, Tuesday, December 13. He was a member of the first graduating class of the University of Utah and had been a practicing physician in the county thirty-five years.

Surviving are his widows, Mrs. Jessie Eldredge Stringham and Mrs. Elvina Smith Stringham, and the following children: Mrs. Delia Sessions, Briant Jr., Jex, Rodney, Golden, Leone, Helen Stringham, Bountiful; Mrs. Lucy S. Taylor, Kaysville; Harvey Stringham, St. Louis; brothers and sisters, Henry, Richard and William Stringham, Bountiful; George Stringham, Moroni; Henry Stringham, Salt Lake; Philip Stringham, Vernal; Mrs. Julia Woolley, Santa Monica, Cal.; Mrs. Philly Grant, Mesa, Ariz.; Mrs. Almeda Johnson, Mrs. Jane Stephenson and Mrs. Emma Stevens, Holden, and Mrs. Teresa Giles, Salt Lake. Funeral services were held in the Bountiful tabernacle.

MISCELLANY

From time to time in this department of California and Western Medicine, appear columns grouped under the following headings: Comment on Current and Recent Articles in this Journal; News; Medical Economics; Readers' Forum; California State Board of Health; and California Board of Medical Examiners. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Popular Lectures at Lane Hall—All interested are cordially invited to be present.

Friday evening, February 10: "Cults, Quacks, and Cures"—Dr. Edgar L. Gilcreest.

Friday evening, February 24: "Chinese Medicine"—Dr. Emmet Rixford.

Friday evening, March 9: "Protection against Tuberculosis"—Dr. Frederick Eberson.

Friday evening, March 23: "Prevention of Heart Disease"—Dr. William Dock.

Perpetual Gift Made University of California Regents—Announcement of a gift which will amount to \$5000 a year, every year, perpetually, for the prevention and cure of infantile paralysis or other diseases of children in California has just been made by President W. W. Campbell. Nearly \$10,000 had previously been donated for this same purpose.

The gift was made anonymously by a "Friend of the University," and will be controlled directly by the Hooper Foundation for Medical Research of the University, whose director, Dr. Karl Meyer, has been seeking for some time to establish a bureau for convalescent serum used in fighting infantile paralysis.

In his letter of presentation to President W. W. Campbell, the donor said: "Dr. Karl Meyer explained to me in detail the other day the work that is being done by the Hooper Foundation in connection with infantile paralysis, and told me how much more could be done if about \$5000 per year was available for this purpose, therefore I would like to give \$5000 per year for this work during my lifetime, and I am also making provision in my will for a fund of \$100,000, interest on same, which will amount to about \$5000, to be devoted to this work."

"It is my wish that the direct purpose for which the fund shall be used is primarily for the study, prevention and cure of infantile paralysis in California, and that the fund shall not be diverted to other or different purposes, except in case some other serious epidemic threatens the lives of the children of this state. The director of the Hooper Foundation, in consultation with my representative or myself, shall decide to use part or all of the fund for the study, prevention and cure of such other diseases of children.

"It is, of course, my idea that this money shall be used by the Hooper Foundation. It will also be understood that the administration of the fund is to be conducted according to the rules of the university, and that the director of the Foundation shall alone be entrusted to sign the customary requisitions.

"I feel sure that an agreement which embodies the above points will be perfectly acceptable to the university and to the trustees of the Hooper Foundation, and I herewith enclose my check covering the first annual subscription."

Tropical Ills to Be Studied—With the broad purpose of "making the tropics safe for white habitation," one of the greatest scientific research projects ever attempted in San Francisco soon will be under way.

A group of noted medical authorities are organizing an institute of tropical disease and hygiene to wage war against the ills which now prevent the Caucasian race from developing or settling permanently in the lands of the torrid zone.

The institute will be housed in the laboratories of

the Hooper Foundation for Medical Research at Third and Parnassus avenues and will be financed by the University of California.

Its program calls for international cooperation with health authorities of tropical nations and for a program of education and research in conjunction with ship surgeons and the public.

Eventually it is planned to build a hospital in the bay district for investigation and treatment of tropical cases.

Steamship and commercial interests are backing the enterprise as an important step in bringing about closer relations between the port of San Francisco and Latin-American nations.

A meeting of the Pacific American Steamship Association last week, presided over by Captain Robert Dollar, passed a resolution indorsing the project.

Dr. Alfred C. Reed, authority on tropical diseases, has resigned the chairmanship of a department in Stanford University to direct the new institute.

Lane Medical Lectures—The next series of Lane Medical Lectures will be given in October, 1928, by Prof. F. d'Herelle, Directeur du Service Bacteriologique du Conseil Sanitaire, Maritime et Quarantinaire at Alexandria, Egypt. The program has not been decided on, but the lectures will probably cover filterable viruses and the bacteriophage.

Bequests to Stanford Medical School—The Medical School has received \$500 from Mr. Edward M. Mills for free beds for children; \$1000 from Miss Helen E. Cowell for physiotherapy treatments for indigent deserving patients; \$100 from a grateful patient, to be used for surgical research; \$610.69 from the estate of Mrs. Ann Whitney Sperry, to be used for the benefit of Protestant and Catholic crippled or orphaned children of San Francisco; \$2500 from Mr. Roy N. Bishop and \$500 from Mr. George T. Cameron as contributions to the Wellington Gregg Fund for the study of nephritis.

Department of Pediatrics—Pediatrics, which so far has been a division of the department of internal medicine, has been made a full department in the Medical School.

Chair of Biology—By the will of the late Dr. Morris Herzstein, one of the prominent physicians of San Francisco, the Stanford University is to receive \$100,000 for a chair in biology.

Recent Lectures—On December 3, 1927, Dr. T. Wingate Todd, professor of anatomy of Western Reserve University Medical School, delivered a lecture on "The Study of Human Alimentary Movements."

On December 7, Dr. Corneille Heymans, extraordinary professor of pharmacology of the faculty of medicine of the University of Ghent, spoke on "Contributions to the Physiology and Pharmacology of the Cardio-Inhibitory and Respiratory Centers."

Nineteen Hundred and Twenty-Nine Lane Lectures—Walter Straub, professor of pharmacology at the University of Munich, will give the Lane Medical Lectures in 1929, which course of lectures will probably be given in April. The details of the program have not as yet been determined.

READERS' FORUM

San Francisco, November 14, 1927.

To the Editors:

The editorial "Twenty-Five Years Ago," in Volume XXVII, Number 5, is very interesting.

It is only fair to the memory of Dr. Philip Mills Jones that attention be called to the dominant thought that was in the minds of the editor and the publication committee which supported him in founding the Journal, the accomplishment of which stands probably as the most enduring monument to the usefulness of the Journal. It should be interesting to the younger members of our profession who have never known of the vicissitudes under which the Journal had its development; it may prove of interest to some of the older ones who have perhaps forgotten.

When the Journal made its first appearance in November, 1902, the necessity of cleaning the advertising pages of medical journals of "unethical advertisements" immediately engaged the attention of the editor and his publication committee. The advertising pages of medical journals at that time generally were filled with nostrums and secret preparations which, had they been reviewed editorially in the journal which published them, would have been condemned. A large proportion of the revenues of these journals, however, were derived from these advertisements, and attack on this evil meant a bitter fight, for the great medical journals of the country were all offenders.

Doctor Jones, however, was a fighter, as many still living can attest who have had occasion to be on the opposite side from him in a controversy. He was a fair fighter, but a tenacious fighter. It would take too long to detail the progress of the bitter fight made at this time to clean the advertising pages of medical journals throughout the land, the acrimonious correspondence, and the abuse and vilification heaped upon Doctor Jones and his associates. It is largely set forth in the editorial pages in the numbers which comprise Volume II (1903). Success came because the cause was righteous.

Today the fight made by your Journal is largely forgotten; in fact much of the credit for clean advertising pages is proudly claimed by some of the former offenders. This matters little, if the object be attained. It is only fair, however, to Dr. Philip Mills Jones' memory that the facts be reviewed.

Yours very truly,
GEORGE H. EVANS.

.TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Volume 1, No. 4, February, 1903

From some editorial notes:

The commercial bodies of San Francisco in joint session passed resolutions early in this month tacitly admitting the presence of bubonic plague in the city, and promising support in the work of eradicating the disease, and rescuing the coast and nation from a threatened calamity. While the action is tardy and, naturally, taken reluctantly, it became absolutely necessary in order to escape the alternative proposed by the Surgeon-General—state quarantine. . . .

Doctor Cheney in his address of welcome last year to the State Society well said: It is undoubtedly good for us to meet together and exchange views. No man knows it all. Each one is able to learn something from his neighbor. . . .

The San Bernardino County Society has completed the necessary arrangements for affiliation with the State Society, and is now in line for protection

* This column aims to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

and progress. Fresno and Riverside counties are also important recent additions. . . .

At the annual meeting of the Kings County Medical Society (Brooklyn, New York), on January 20, Doctor Bartley read a report of the committee on milk inspection that is worthy of attention. It was found that the number of bacteria per cc. of ordinary "grocery store" milk averaged about 10,000,000, while the number per cc. in the milk furnished by dealers complying with their requirements and "certified" could easily be kept below 1500, and in many instances was well below 1000. . . .

It is not proper nor is it ethical for the physician to make use of secret preparations or nostrums in his treatment of the sick. . . .

It is with much pleasure that the journal records the passage of a bill through the Senate, on February 4, granting a pension of \$125 a month to the widow of the late Dr. Walter Reed, in special recognition of his eminent services to mankind in discovering the cause as well as the means of preventing transmission and propagation of yellow fever. . . .

The Carnegie Institute (as well as the medical profession) is to be congratulated for undertaking the publication of the Index Medicus. Like many purely scientific publications, it could not be self-supporting, and hence died; that it is to be brought into life once more and the work taken care of by the Carnegie Institute, will be welcome news to many who have sadly felt the loss of this very valuable bibliographic publication. . . .

From the minutes of the San Francisco County Medical Society:

At the regular meeting of the San Francisco County Medical Society, on Tuesday evening, February 10, Dr. George F. Shiels discussed Edebohl's operation for nephritis. . . .

Dr. George Goodfellow read a paper on "Treatment of Gunshot Wounds," particular reference being made to wounds in the abdomen. . . .

Doctor Cooper said that in the Boer war a surgeon who had been shot in the abdomen refused absolutely to take any sort of nourishment tendered him by well-meaning attendants on the field. He had eaten but little for some time before and his stomach was empty. The wound in the abdomen healed rapidly and the connection between the patient's abstinence and recovery was interesting. . . .

Doctor Carpenter read the draft of a letter to be sent to President Roosevelt advocating the appointment of Dr. Chester Rowell, at present State Senator from the Sixteenth District, to membership on the Panama Canal Commission. On motion the letter was accepted as the sense of the society and ordered to be sent to the President. . . .

From the minutes of the California Academy of Medicine:

The regular meeting of the academy was held at the offices of Doctor Sherman on the evening of January 27, Doctor Montgomery in the chair. . . .

Dr. S. J. Hunkin presented a patient showing recovery from operation for tuberculosis of the ankle joint. . . .

Dr. Philip King Brown read a preliminary report on his observations of *Strongyloides intestinalis* and exhibited microscopic specimens of embryotic parasites. . . .

From an article on Hydrotherapy by Dr. George A. Hare, Fresno:

If anyone thinks that hydrotherapy can be safely administered by the unskilled, successfully utilized by the empirical, or be easily comprehended by the superficial physician, we invite him to dispossess his mind of the physiological processes which may be controlled almost at will by the scientific use of heat and cold. . . .

From an article on Spinal Anesthesia with Tropococaine in Genito-Urinary Surgery by Dr. M. Krotoszyner, San Francisco:

My own experience with spinal anesthesia dates back about two years. At that time I witnessed several operations under spinal anesthesia by Doctor Tait, who, with Doctor Cagliari, wrote a remarkable treatise upon the subject. I soon afterward proceeded to experiment with spinal cocainization in some of my old prostatic patients where a general anesthetic appeared to be dangerous on account of heart and kidney complications. . . .

From the minutes of the San Francisco Society of Eye, Ear, Nose and Throat Surgeons:

Dr. Louis C. Deane showed a man aged 62, for whom Dr. H. B. de Marville and he had built a nose from the skin of his forearm. . . .

From the death notices:

Dr. H. H. Warburton, a pioneer physician of the Pacific Coast, died at Santa Clara on the 8th inst. When Doctor Warburton came to this coast there were but three physicians in California, the only other one in San Francisco having been located at the Presidio. . . .

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.
Secretary of the Board

Board of Medical Examiners Annual Report, 1927—Digest

Comment is made on the necessity of constant vigilance in investigating credentials, specific mention being made of three cases of attempted fraud in securing a license to practice in California, each prior to the date when the Diploma Mill Bill making it a felony to attempt fraud in securing a license became effective.

Applications filed during 1927 were slightly increased over those of the prior year. As usual the larger number of applications were filed by those licensed in other states who sought to practice in California without examination.

A greater number of certificates were issued in 1927 than in the prior year, the increase being both in reciprocity certificates and those issued after written examination. The larger number of reciprocity certificates were issued to those coming from Illinois, with Iowa second and New York third, the total number issued being 321 as against forty-four licentiates of California who sought a license to practice in other states based on their California certificate.

The board restored three revoked certificates placing the holders on probation, thus giving them the right to practice pending good behavior.

The statistics of written examinations showed that the existing California medical schools again maintained a perfect score without a single failure, whereas 82 per cent passed and 17 per cent failed of those graduates of extra state schools who took the California written examination for a physician's and surgeon's certificate. The larger percentage of failures are recorded against graduates of foreign schools, and it is undetermined whether this is due to inferior education or whether it is due to lack of knowledge of the English language.

Thirty-two California licentiates were called before the board for hearings based on charges of unprofessional conduct, the larger portion being based on narcotic violation, and as a result of these hearings eleven certificates were revoked.

Attention was directed to various legislative enactments of interest to the Board of Medical Examiners, some being amendments to the Medical Practice Act, with special attention being drawn to the amendment prohibiting the ambulatory treatment of narcotic addicts. Favorable comment also made on the enactment of the so-called "diploma mill bill" which makes it a felony to attempt fraud in securing a license to practice in California.

The College Incorporation Bill was also mentioned as progressive legislation. It is hoped that this bill will curb the heretofore easy incorporation of so-called "sun down" colleges authorized by the state to issue any kind of a professional degree without execution of physical equipment, teaching personnel or financial responsibility.

The legal report, both North and South, showed activities in enforcement of the law, forty-three cases having been disposed of in the North and fifty in the South. The policy of the board in suggesting to the trial court the imposition of a suspended sentence rather than a fine we believe has resulted in better enforcement.

Comment is made on the laws and court delays in hearing the appeal filed by Doctors Dyment, Rinaldo, and Young, following the revocation of their license by the board in 1924, our legal department having reported that these cases have not yet been given a place on the calendar of the appellate court, southern district.

Two hundred and seventy-three individuals classed as doctors died during 1927. Of this list 192 were licensed by the Board of Medical Examiners.

According to the Los Angeles *Times* of December 20, Dr. James W. Beggs was held responsible by a coroner's jury for an automobile and street-car crash in which his passenger Petita Romerez was fatally injured.

"Dr." Matthus Blankenberg, self-styled Lord Matthus Blankenberg of the old castle of Blankenberg of Germany, and the present Prince of the Tribe of Isaac of Israel, was recently arrested at Thermal, California, on a charge of violating the Medical Practice Act. It is alleged that he "is an unsuccessful medical practitioner with a large practice, and his Mexican clientele was keeping him and his Ford car in good going order until his death certificates began to come in to Undertaker Casey." His trial is set for January 13.

The San Francisco *Chronicle* of January 5, 1928, relates the resignation of Health Officer C. R. Blake of Richmond and the appointment of Dr. I. O. Church.

Following finding of the body of Mrs. Buckles lying on an operating table in an abandoned physician's office in Oakland, the police made an active search for an individual calling himself Dr. Irwin A. Cole and the search ended at Buffalo, New York, with the arrest of Charles van Dickenson, who will be extradited and returned to Oakland for trial. There is no evidence that Van Dickenson is a graduate of a medical school, and just why he assumed the name of a reputable practitioner in LeRoy, New York, is as yet an unsolved mystery.

Governor C. C. Young today approved a request for extradition from Buffalo, New York, of Charles van Dickenson, alias Cole and Kohn, jointly accused with E. R. Cook with the murder of Mrs. Elizabeth Buckles at Oakland during the performance of an illegal operation on December 20. . . . (San Francisco *Examiner*, January 8, 1928.)

George A. Hunt, accused of practicing medicine without a license, was at liberty on \$100 bail today. (San Francisco *News*, December 28, 1927.) Hunt de-

clared that he was a graduate of the Chicago College of Naprapathy and had recently turned down a proposition to enter into a partnership with "Doctor Cole." Police declared that Hunt's arrest had no connection with investigation of the death of Mrs. Buckles. (*Oakland Post-Enquirer*, December 27, 1927.)

"Reverend Doctor" Edmund R. Cook, religious cult pastor, held for investigation in connection with an alleged operation which resulted in the death of Mrs. Betty Buckles in the office of Irwin A. Cole of Oakland Wednesday, may be charged with murder. . . . Cook is being held for investigation following information given Oakland police by Mrs. Josephine Cole, wife of "Doctor" Cole, that Cook was present and assisted at the operation. Mrs. Cole denied she had any hand in Mrs. Buckles' death, but admitted having assisted at previous illegal operations. . . . Cook maintained the headquarters of his "First Psychology Church" in the Pacific Building. . . . (*San Francisco Daily News*, December 23, 1927.) Later reports relate Cook was held to answer December 30 on a charge of murder, and bail fixed at \$20,000.

Dr. George H. Coulthard, 303 Pacific Avenue, yesterday was found guilty by a jury in Department A of the Superior Court on one of three counts of complaint charging violation of the State Poison Act. Penalty is from six months to six years' imprisonment in either the county jail or the state penitentiary. . . . Prosecution had alleged sale of narcotics on September 8, 12, and 13, the jury found the defendant guilty of sale on the last-named date. . . . (*Long Beach Sun*, January 6, 1928.) Previous mention in "News Items" of November, 1927.

According to press reports, Joan Soto Ibarra on December 9, 1927, pleaded guilty in Corona to violation of the Medical Practice Act and paid a fine of \$100. "It is alleged that one of Ibarra's patients, a young Mexican girl of some twenty years of age, was recently confined in the state asylum at Patton as the alleged result of treatments given her by Ibarra."

According to report of Assistant Special Agent Davidson, Conrado Madrigal was recently arrested in Fresno on a charge of violation of the Medical Practice Act, it being related that he had sold simple remedies to Mexicans at exorbitant prices, it being alleged that he buys the medicine from the drug store, takes it out supposedly as a delivery boy, tells the patients that he is a physician and others that he is a druggist, and also is alleged to represent himself as Dr. Porfirio Diaz. On December 16, he pleaded guilty and was given a six months' sentence in the county jail, suspended for six months on condition that he discontinue further violation of the law.

Newspapers recently have been filled with articles relating the arrest of Dr. Charles M. McMillan, reported to be a former practitioner of Texas, who has been indicted by the Grand Jury in Los Angeles County for the murder of Mrs. Amelia Appleby, widow of a wealthy Chicago inventor. The woman's body was found in a sack in San Fernando Valley. There is no one by this name licensed to practice in California. The Federation Bulletin of September, 1922, relates receipt of information from the Medical Examiners of Texas relating said board had "recently revoked the license of Dr. Charles M. McMillan, formerly of Waco, who on November 19, 1920, was indicted for unlawfully selling morphin and on November 24 was found guilty and sentenced to two years in the penitentiary."

In a forceful article on the narcotic evil printed in the San Francisco *Examiner* of January 5, 1928, Annie Laurie related that "Director Frank H. Benson of the new narcotic division of the State Board of Pharmacy is going to travel through California telling people what 'dope' is and who uses and why it is the greatest menace to the youth of the country today. . . . Are

we as a state going to be big enough and broad enough and wise enough to make a real stand in this 'dope' business or are we just going to say 'Yes, yes, too bad,' and let it go at that? I wonder, don't you?"

Our attention was recently called to a sign reading: "Dr. G. C. Sheldon, Chiropractor, Eye, Ear, Nose and Throat Trouble, Fallen Arches Treated, Naturopathy."

The records show that on January 6, in the city of Los Angeles, "Dr." A. M. Bensen, sometimes known as M. V. Benson, business manager or director of the Gilbert Thayer Foundation, pleaded guilty to a violation of the Medical Practice Act and paid a fine of \$250. Under date of December 21, 1927, the Chief of Police of Whittier, California, related the arrest on a charge of speeding and drunkenness of an individual alleged to be Dr. M. V. Benson, Gilbert Thayer Foundation, Los Angeles, who was taken by the police from a Chevrolet coupé bearing a California license plate under which was the word "physician." "Doctor Benson pleaded guilty to both charges, speeding and drunk, and was fined \$50."

According to report of our investigation department the Gilbert Thayer Health Foundation, northwest corner of Fourth and Broadway, Los Angeles, conducts daily lectures from 10 a. m. to 6 p. m., and prospects are given a card directing them to the third floor where it is claimed they have a staff of physicians, surgeons, osteopaths, chiropractors, optometrists, etc. It is alleged that on arrival the patient is given an examination, for which he is charged \$15 and then a course of treatments by some member of the staff, the report showing nine with the degree Doctor of Chiropractic, two with the degree Doctor of Osteopathy, and one optometrist. "A. V. Bensen is the business manager in charge of the Thayer Health Foundation. He is not licensed, but says that he is a graduate of Columbia University, 1917, that he has never applied for a license." Reports relate that on January 6 Bensen pleaded guilty to a violation of the Medical Practice Act and paid a fine of \$250.

Following a complaint filed with our office, investigation was made of Guido Vicino, licensed optometrist, who was alleged to have treated a case of gonorrhreal ophthalmia, the patient now being reported as in the San Francisco Hospital, facing the possible loss of the sight of one eye.

Dr. K. J. Weberg, chiropractor, living at 1608 North Fair Oaks Avenue, was arrested on a possession of liquor charge last night by Sergeant J. L. Nicholl of the Police Vice Squad. A quantity of liquor was confiscated. Doctor Weberg, president of the Pasadena College of Chiropractic, was held in the city jail last night pending furnishing of bail set at \$500. (*Pasadena Morning Sun*, December 10, 1927.) Previous entry, "News Items," July, August, and September, 1926.

According to reports, K. Watanabe, an unlicensed Japanese, was on December 28 convicted of second degree manslaughter in Department 5 of the Superior Court of Alameda County in connection with "an abortion performed in the back of his drug store." Previous entry, "News Items," December, 1927.

Report of our investigation department relates that John Paul Whitt, without qualifications, commenced the alleged practice of medicine in San Francisco, and at the time our agent intended placing him under arrest he learned that Whitt was a deserter from Letterman General Hospital, so instead of charging him under Section 17, he was confined in the city prison, en route to the Presidio." It was learned that Whitt formerly was connected with the out-patient work and was a private in the Medical Corps. Undoubtedly his further activities as a medical practitioner will be somewhat limited by army discipline.

